

6 Mar. 1915

# SOUTHERN NIGERIA.



---

## ANNUAL MEDICAL REPORT

FOR THE

YEAR ENDING DECEMBER 31ST, 1913.

---

PRINTED BY

—WATERLOW & SONS LIMITED, LONDON WALL, LONDON, E.C.—  
1915.



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# SOUTHERN NIGERIA.

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## ANNUAL

# MEDICAL AND SANITARY REPORT

FOR THE  
YEAR ENDING 31ST DECEMBER, 1913.

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### I.—ADMINISTRATIVE.

#### STAFF.

The Medical Staff consists of :—

- 1 Principal Medical Officer.
- 1 Deputy Principal Medical Officer.
- 1 Senior Sanitary Officer.
- 2 Provincial Medical Officers.
- 3 Senior Medical Officers.
- 1 Personal Assistant to the Principal Medical Officer.
- 1 Sanitary Officer.
- 65 Medical Officers.
- 3 Native Medical Officers.

One Medical Officer was seconded for duty at the Colonial Office, one for service with the Yellow Fever (West Africa) Commission and one as Medical Officer of Health, Lagos.

The following Medical Officers were appointed :—

- Dr. F. M. Rice.
- „ W. W. Grieve.
- „ D. T. Birt.
- „ H. North.
- „ W. E. Glover.
- „ H. H. Stewart.

The following promotions took place :—

Dr. T. Hood, Principal Medical Officer, appointed 12th June, 1913, (vice Dr. Langley, deceased).

Dr. J. H. Collier, Medical Officer, Gold Coast, was transferred to Southern Nigeria, on promotion to the rank of Senior Medical Officer, on 15th November, 1913, and arrived at Lagos and assumed duty on 23rd November, 1913.

## RETIREMENTS.

Dr. St. George Gray, Senior Medical Officer.  
 Dr. Maples, Medical Officer.  
 Dr. Finlay, Medical Officer.  
 Dr. Macdonald, Medical Officer.

## APPOINTMENTS TERMINATED.

Dr. Hiscock, Medical Officer.  
 Dr. Ruthven, Medical Officer.

## RESIGNATIONS.

Dr. W. Browne, Medical Officer.  
 Dr. G. M. Grey, Medical Officer.  
 Dr. Hipwell, Medical Officer.

## DEATHS.

Dr. W. H. Langley, C.M.G., Principal Medical Officer, died on 11th June, 1913, from Gastric Ulcer.

Dr. P. Foran, Medical Officer, died on 11th August while proceeding on leave on board the s.s. "Nigeria." Death was due to an accident.

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Dr. Hutton was selected for service in connection with the Yellow Fever Commission, Gold Coast.

Dr. Wyler was detailed for duty in connection with the investigation into the outbreak of Yellow Fever at Abeokuta and Warri.

Dr. Scott Macfie, of Northern Nigeria, having accepted the post of Assistant Director, Medical Research Institute, Yaba (vice Dr. Coghill seconded for duty with the Yellow Fever Commission), arrived in Lagos and assumed the duties of his office on 27th March, 1913.

Dr. Seidelin, Investigator to the Yellow Fever Commission, arrived in Lagos from Accra on 27th September, 1913, and began his investigations.

## FINANCIAL.

## STATEMENT OF REVENUE FOR THE YEAR 1913.

Hospital Fees and Receipts	...	...	...	...	£3,396 18 10
----------------------------	-----	-----	-----	-----	--------------

## ESTIMATED REVENUE.

Hospital Fees, etc.	...	...	...	...	2,000 0 0
---------------------	-----	-----	-----	-----	-----------

## STATEMENT OF EXPENDITURE FOR THE YEAR 1913.

			Estimate.		Actual Expenditure.
Medical and Laboratory	...	...	£81,170	...	£77,306 13 10
Sanitary	...	...	10,872	...	10,633 16 9
Total	...	...	£92,042	...	£87,940 10 7



## II.—PUBLIC HEALTH.

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### (a).—GENERAL REMARKS.

With the exception of Lagos and Ebute Metta, Vital Statistics are quite unreliable, and it is at present impossible to compile anything but approximate statistics. Those given are as close an estimate as can be arrived at with the data available.

There has been no serious epidemic, with the exception of yellow fever, a full report of which is included in the volume of Investigators' reports which is being published by the Yellow Fever (West Africa) Commission. There has been no case of plague reported.

On the whole the health of Europeans and natives has been good, there being a reduction in the number of deaths and invalidings in European officials. There were also fewer native officials invalided, but the deaths were increased by two.

*Malaria*.—As compared with the year previous, there has been a reduction in the number of cases of malarial fever treated at the various hospitals and dispensaries. The following table gives the percentage of malaria to the total number of diseases treated for the last seven years :—

1907	...	...	...	7·9
1908	...	...	...	7·3
1909	...	...	...	7·12
1910	...	...	...	7·57
1911	...	...	...	8·0
1912	...	...	...	8·18
1913	...	...	...	7·45

The table would go to show that the percentage of cases treated in 1911 and 1912 were above the average, while that in 1913 was just about average.

*Blackwater Fever*.—There has been an increase of three in the number of cases of this disease over the previous year, with an increased death rate. Two cases are reported as occurring in natives, with no deaths. One case was in a West Indian and the other in a native boy aged 12 years.

Twelve of the cases occurred in officials, with 2 deaths and 4 invalidings, and 14 in non-officials, with 4 deaths and 9 invalidings.

*Trypanosomiasis*.—Only one case of Trypanosomiasis is reported as having occurred outside of the Eket District. This case occurred at Ibadan, and was imported from either the Central or Eastern Provinces—probably from Onitsha or Obudu. At present the disease appears to be almost confined to the Eastern Province. There were under observation and treatment 378 cases during the year. Atoxyl is the drug employed as a routine in the treatment, and has given promising results. Salvarsan has been tried, but the results have not been encouraging.

Dr. Scott Macfie has observed and described, in these cases, a Trypanosome differing morphologically and in virulence from *T. gambiense*, and has proposed for it the name of *T. nigeriense*.

Reports on Trypanosomiasis by Drs. Scott Macfie and Gallagher are included under "Scientific."

*Filariasis*.—This disease is most prevalent in the Eastern Province. Sixty-three cases in all are reported, of which 43, including one European, come from the Eastern Province. These figures do not accurately represent the prevalence of the disease, as cases come under observation comparatively seldom. In the Western Province, however, although only 7 cases are recorded, out of a large number of adult natives examined, microfilariae were found in the blood of 40 per cent. Out of another 50 cases examined, *Filaria nocturna* was found in 9, *Filaria diurna* in 10, and *Filaria perstans* in one.

*Dysentery* is usually of the amoebic type, and has increased from 0·98 per cent. of the total cases treated in 1911, to 1·03 per cent. in 1912 and 1·14 per cent. in 1913.

*Leprosy*.—There are three leper asylums:—At Lagos (Yaba), Ibusa and Onitsha. The Nastin treatment, started in 1910, has been carried on during 1913, with, on the whole, unsatisfactory results. In no case did the treatment result in a cure, though in many of the cases the progress of the disease seemed to be delayed. In the Western and Eastern Provinces leprosy is comparatively a rare disease. The principal foci appear to be at certain stations in the Central Province on the left bank of the Niger, viz.:—Onitsha, Asaba, Aboh, Awka and Idah. A scheme for the segregation of lepers in villages is at present under consideration by Government.

*Tuberculosis*.—One hundred and seventy-nine cases treated during the year, of whom 40 died. Two of these occurred in European Government officials, with one invalided. Two cases, both of which were invalided, occurred in European non-officials.

Tuberculosis is more common among natives than these figures suggest, and the disease is very fatal to them.

The following table gives the percentage of tuberculosis to other diseases treated during the last seven years:—

1907	...	...	...	0·17
1908	...	...	...	0·17
1909	...	...	...	0·18
1910	...	...	...	0·15
1911	...	...	...	0·19
1912	...	...	...	0·15
1913	...	...	...	0·17

*Tetanus*.—This is very common in Lagos and prevails all the year round. Slight and neglected wounds of the feet are the usual mode of infection. Forty-six cases were treated, with fifteen deaths, a mortality so low that it suggests the probability that the native may enjoy a certain degree of immunity to the disease. Anti-tetanic serum is used freely in the treatment.

*Chicken-pox*.—This disease is usually of a mild type, with a low mortality. It is endemic all over the country, particularly in the Eastern and Central Provinces.

*Small-pox*.—There has been no epidemic recorded. The total cases amount to only 17.



*Ankylostomiasis*.—Two hundred and twelve cases came under treatment ; all natives. This figure gives a very inaccurate idea of the prevalence of this disease. Cases rarely come under observation except when they present themselves for treatment for some other complaint. It is fairly safe to say, however, that at least 50 per cent. of the population is infected. It is not the rule to observe serious symptoms, beyond a moderate grade of anæmia in those infected. An investigation is at present being conducted into the prevalence of the infection, and the results ought to prove interesting.

*Pneumonia*.—This disease occurs principally in the Harmattan season. Two hundred and seventeen cases were treated as in-patients, with 54 deaths.

*Vaccination*.—Vaccination is being steadily persevered with. The Table on page 148 gives a comparison with the previous three years. There has been a falling off in the total number vaccinated as compared with 1912. This is possibly due to the fact that there has been no epidemic of small-pox during the year.

*Venereal Disease*.—In this disease also, the returns give but a very imperfect idea of its prevalence. A better idea of its incidence might be obtained from the enormous sales by the mercantile firms of the different and well-known remedies, such as iodide of potash, sandal-wood oil, etc.

*Dentistry*.—A report of the work done during the year by the Government Dentist is included (page No. 52).

## (b.)—EUROPEAN OFFICIALS.

### GENERAL REMARKS.

There were 1,375 European officials treated during the year, of whom 676 were “ off duty,” 52 were invalided and 5 died. The general health may be considered to have been fair, and it compares favourably with the previous year.

The principal diseases of a tropical nature treated were malarial fever, blackwater fever and dysentery.

The percentage of malaria to total diseases treated was 23·6 : of blackwater fever 1·15, and of dysentery 1·5. .

The death rate from blackwater fever was 16·6 per cent.

Malaria and dysentery were characterized by a “ nil ” mortality.



TABLE SHOWING THE SICK, INVALIDING, AND DEATH RATES OF EUROPEAN OFFICIALS.

	WESTERN PROVINCE.			CENTRAL PROVINCE.			EASTERN PROVINCE.			TOTAL, SOUTHERN NIGERIA.		
	1911.	1912.	1913.	1911.	1912.	1913.	1911.	1912.	1913.	1911.	1912.	1913.
Total number of officials resident ...	908	967	972	237	594	578	227	507	596	1,372	2,068	2,146
Average number resident ...	373	561	592	94·4	99	116	127·6	141·2	134·52	595	801·2	842·52
Total number on sick list ...	157	372	360	141	159	146	163	178	170	461	709	676
Total number of days on sick list ...	1,413	2,563	2,580	807	1,332	1,265	2,305	1,391	1,199	4,525	5,285	5,044
Average daily number on sick list ...	3·8	7	7·06	2·2	3·6	3·4	6·3	3·8	3·3	4·04	4·71	4·6
Percentage of sick to average number resident ...	42·1	66·3	137·1	149·3	160	135·3	127·7	128	127·8	77·4	88·49	133·4
Average number of days on sick list to each patient ...	9	6·8	7·2	5·7	8·3	8	4·1	7·8	6·8	9·8	7·4	7·3
Average sick time to each resident ...	4·7	4·5	4·3	8·5	13·4	10·9	18	9·8	8·8	7·6	6·5	8
Total number invalided ...	28	40	24	3	9	12	10	7	16	41	57	52
Percentage of invalidings to total residents	3·8	4·1	2·1	1·2	1·5	2·2	4·4	1·38	2·7	2·9	2·75	2·28
Total deaths ...	7	5	2	2	1	1	—	3	2	9	9	5
Percentage of deaths to total residents ...	·7	·5	·2	·8	·16	·17	—	·59	·33	·6	·43	·17
Percentage of deaths to average number resident ...	1·8	·8	·3	2·1	1·01	·86	—	2·1	1·4	1·5	1·12	·85
Number of cases of illness contracted away from residence ...	—	—	—	—	2	4	—	—	—	—	2	4

TABLE SHOWING THE SICK, INVALIDING, AND DEATH RATES OF NATIVE OFFICIALS.

	WESTERN PROVINCE.			CENTRAL PROVINCE.			EASTERN PROVINCE.			TOTAL SOUTHERN NIGERIA.		
	1911.	1912.	1913.	1911.	1912.	1913.	1911.	1912.	1913.	1911.	1912.	1913.
Total number of officials resident ...	—	—	1,406	368	633	764	--	824	662	368	1,457	2,832
Average number resident ...	--	—	1,346	249.23	376	560	—	582.4	478.56	249.23	958.4	2,384.56
Total number on sick list ...	—	—	361	333	314	304	—	569	145.3	333	883	810.3
Total number of days on sick list ...	—	—	2,881	1,634	1,226	1,395	—	3,092	5,431	1,634	4,318	9,707
Average daily number on sick list ...	—	—	7.8	.75	3.3	3.8	—	8.4	14.8	.75	5.85	8.8
Percentage of sick to average number resident ...	—	—	25.6	.99	.87	.17	—	97.7	303.6	133.61	92.13	33.96
Average number of days on sick list to each patient ...	--	—	7.7	7.54	3.9	4.5	—	5.43	3.7	4.90	4.89	11.97
Average sick time to each resident ...	—	—	2.1	1.51	1.9	2.4	—	5.3	8.2	6.55	4.50	4
Total number invalided ...	—	—	2	2	1	2	—	6	3	2	7	7
Percentage of invalidings to total residents	—	—	.14	—	.15	.26	—	.7	.45	.54	.48	24
Total deaths ...	—	—	6	2	3	3	—	3	8	2	6	17
Percentage of deaths to total residents ...	—	—	.42	—	.47	.39	—	.3	1.2	.54	.41	.60
Percentage of deaths to average number resident ...	—	—	.44	—	.79	.53	—	.5	1.6	.80	.62	.71
Number of cases sickness contracted away from residence ...	—	—	—	—	2	1	—	—	—	—	2	1

12  
A

## (d.)—GENERAL EUROPEAN POPULATION.

Reliable statistics for the non-official population are impossible to obtain. A list of the invalidings and deaths, as far as are known, is however attached.

The general health of the European population might be described as fair. The principal diseases treated were :—

Malaria.  
Blackwater fever.  
Anæmia.  
Dysentery.  
Neuralgia.  
Diseases of the digestive system.  
Diseases of the respiratory system.  
Diseases of the generative system.  
Arthritis.

## (e.)—GENERAL NATIVE POPULATION.

As only a small proportion of the births and deaths in the Colony are registered, it is quite impossible to obtain data of even moderate accuracy. In Lagos and Ebute Metta registration is compulsory, and the statistics are given, though they cannot be considered as very reliable.

Malaria, venereal disease, dysentery, rheumatic affections, conjunctivitis, diseases of the digestive system, ulcers and abscesses are the principal diseases, with injuries, which come under treatment. Dysentery, pneumonia, heart disease and injuries account for the majority of the deaths amongst adults.

## INVALIDINGS OF EUROPEANS, 1913.

Province.		Officials.		Non-Officials.	
WESTERN	...	Dacryo-cystitis	... 1	Dysentery	... 1
		Anæmia	... 3	Malaria	... 3
		Valvular Disease of		Blackwater Fever	... 2
		Heart	... 1	Anæmia	... 3
		Arthritis	... 3	Arthritis	... 1
		Renal Calculus	... 1	Neuritis	... 1
		Gastritis	... 1	Valvular Disease of	
		Sun Trauma...	... 1	Heart	... 1
		Adenitis	... 1	Gastritis	... 2
		Neuritis	... 1	Brights Disease	... 1
		Neurasthenia	... 1		
		Insomnia	... 3		
		Appendicitis...	... 1		
		Dysentery	... 1		
		Malaria	... 3		
		Gastric Ulcer	... 1		
		Delusional Insanity...	1		
			—24		—15
CENTRAL...	...	Tuberculosis	... 1	Dysentery	... 1
		Meningitis	... 1	Malaria	... 10
		Acute Rheumatism	... 1	Tuberculosis	... 2
		Cystitis	... 1	Yellow Fever	... 1
		Dysentery	... 1	Anæmia	... 1
		Syncope	... 1	Arthritis	... 1
		Malaria	... 2	Neuritis	... 2
		Appendicitis...	... 1	Dyspepsia	... 1
		Hepatitis	... 1	Hepatitis	... 1
		Insomnia and Mental		Local Injury...	... 1
		Overstrain...	... 1	Tumour	... 1
		Adenitis	... 1		
			— 12		—22
		Carried forward	... 36		37



INVALIDINGS OF EUROPEANS, 1913—*continued*.

Province.	Officials.			Non-Officials.		
EASTERN...	...	Brought forward	... 36			37
		Hepatic Abscess	... 1	Malaria	... 3	
		Gastritis	... 2	Blackwater Fever	... 7	
		Hepatitis	... 1	Measles	... 2	
		Blackwater Fever	... 4	Anæmia	... 2	
		Enteritis	... 1	Syncope	... 1	
		Appendicitis...	... 1	Gastritis	... 1	
		Alcoholism	... 1	Local Injury...	... 1	
		*Mental Disease	... 1			
		Neuritis	... 1			
		Local Injury (Loose				
		Cartilage Knee)	... 1			
		Arthritis	... 1			
		Malaria	... 1			
			—16			—17
		Total	... 52			54

## DEATHS—EUROPEANS, 1913.

## IN HOSPITALS.

Province.	Officials.			Non-Officials.		
WESTERN	...	Blackwater Fever	... 1	Dysentery	... 1	
		Abscess...	... 1	Malaria	... 2	
				Yellow Fever	... 3	
				Appendicitis	... 1	
				Tumour...	... 1	
CENTRAL...	...	Blackwater Fever	... 1	Enteric	... 1	
				Malaria	... 1	
				Blackwater Fever	... 2	
				Yellow Fever	... 3	
EASTERN...	...	Endocarditis	... 1	Blackwater Fever	... 2	
		Valvular Disease of Heart (Aortic)	... 1			
		Total	... 5			17

## DEATHS—EUROPEANS, 1913.

Province.	Officials.			Non-Officials.		
WESTERN	...	Blackwater Fever	... 1	Appendicitis	... 1	
		Liver Abscess	... 1	Acute Nephritis	... 1	
		Gastric Ulcer	... 1	Yellow Fever	... 7	
				Malaria	... 3	
				Carcinoma	... 1	
				Drowning	... 3	
				Blackwater Fever	... 1	
				Convulsions	... 1	
				Liver Abscess	... 1	
				Dysentery	... 1	
		Carried forward	... 3			20

\* This case does not appear in the Return of Diseases as it was not under treatment.

DEATHS—EUROPEANS, 1913—*continued*.

Province.	Officials.			Non-Officials.		
	Brought forward	...	3			20
CENTRAL...	Blackwater Fever	..	1	Malaria	... ..	4
				Dropsy	... ..	1
				Fractured Skull	... ..	1
				Enteric Fever	... ..	1
				Drowning	... ..	1
				Blackwater Fever	... ..	2
				Yellow Fever	... ..	3
EASTERN...	Endocarditis	... ..	1	Blackwater Fever	... ..	2
	Valvular Disease of			Cerebral Hæmorrhage		
	Heart	... ..	1	(caused by violence)		1
	Drowning	... ..	1	Apoplexy	... ..	1
			— 4			—17
	Total	... ..	<u>7</u>			<u>37</u>

NOTE.—These statistics are not reliable. They have been compiled from the Register of Vital Statistics and the Returns of Diseases and Deaths from the various Stations.

## DEATHS AND INVALIDINGS—NATIVE OFFICIALS, 1913.

Province.	Invalided.			Died.		
WESTERN	Morbus Cordis	... ..	1	Morbus Cordis	... ..	2
	Pleurisy	... ..	1	Stricture	... ..	1
				Ankylostomiasis	... ..	1
				Œsophageal Disease	... ..	1
				Pneumonia	... ..	1
CENTRAL...	Ascites	... ..	1	Morbus Cordis	... ..	2
	Cellulitis	... ..	1	Dysentery	... ..	1
EASTERN...	Defective Eyesight	... ..	1	Pneumonia	... ..	3
	Neurasthenia	... ..	1	Dysentery	... ..	1
	Morbus Cordis	... ..	1	Paralysis	... ..	1
				Abscess	... ..	1
				Malaria	... ..	1
				Phthisis	... ..	1
	Total	... ..	<u>7</u>			<u>17</u>

## LAGOS, 1913.

Number of deaths of children under five years of age	... ..	917
Percentage of deaths of children under five years to total number of deaths	... ..	49·1
Death rate of children under one year per 1,000 births	... ..	263·8

## EBUTE METTA, 1913.

Number of deaths of children under five years of age	... ..	119
Percentage of deaths of children under five years to total number of deaths	... ..	38·2
Death rate of children under one year per 1,000 births	... ..	253·8

## LAGOS.

Year.	Total births.	Birth rate per 1,000.	Total deaths.	Death rate per 1,000.	DEATHS.						Total deaths under 5 years.	Rate per 1,000.	Total still-births not included in return.	Estimated population.
					Under 1 year.	Rate per 1,000.	Between 1 and 2 years.	Between 2 and 3 years.	Between 3 and 4 years.	Between 4 and 5 years.				
1909	2,312	43·3	1,975	37·0	729	13·6	135	90	52	49	1,055	19·4	155	53,299
1910	2,389	44·2	1,937	35·8	774	14·3	78	61	54	44	1,011	18·7	123	53,986
1911	2,430	39·8	1,873	30·7	692	11·3	74	54	38	31	889	14·5	132	61,000
1912	2,391	39·1	1,829	29·9	670	10·9	108	50	29	35	892	11·3	118	61,000
1913	2,437	38·02	1,867	29·1	643	10·03	103	85	53	33	917	14·3	129	64,096

## EBUTE METTA.

YEAR.	Total births.	Birth rate per 1,000.	Total deaths.	Death rate per 1,000.	DEATHS.						Total deaths under 5 years.	Rate per 1,000.	Total still-births not included in return.	Estimated population.
					Under 1 year.	Rate per 1,000	Between 1 and 2 years.	Between 2 and 3 years.	Between 3 and 4 years.	Between 4 and 5 years.				
1909	264	35·5	284	38·2	83	11·1	12	11	1	2	109	14·6	21	7,417
1910	262	32·3	325	40·1	83	10·2	20	4	7	2	116	14·3	17	8,104
1911	288	24·0	317	26·4	91	7·5	12	4	2	7	116	9·6	22	12,000
1912	315	26·2	346	28·8	71	5·9	21	10	6	11	119	9·9	28	12,000
1913	327	25·9	311	24·6	83	6·5	19	5	3	9	119	9·4	25	12,609

## YELLOW FEVER.

During the year 1913 yellow fever was officially declared, as far as I am aware, for the first time in the history of the Colony and Protectorate of Southern Nigeria.

The Provincial Medical Returns record thirty-four cases as coming under treatment—ten in Europeans with four deaths, three in Syrians with two deaths, and twenty-one in natives with a “nil” mortality.

There were three distinct outbreaks during the year, followed by several cases among the European crews of ships in harbour; the inference is that the latter cases were contracted outside Lagos.

The first outbreak commenced on 12th May, when six cases were notified—two Europeans and four natives. The first case was an imported one from Abeokuta, a European, and he died. The last case of this outbreak was reported on the 28th May.

During the second outbreak, which began on 18th July, seventeen cases were reported—twelve Europeans, three Syrians and twelve natives. Again the first victim was a European, and the case ended fatally. Of the three cases among the Syrians two ended fatally. Six of the native cases were Kroo-boys. During this epidemic quarantine measures were enforced for the first time. As no further cases occurred quarantine was raised on 22nd September.

The third outbreak began on 24th September. Five cases were notified—one European and four natives—and was characterised by a “nil” mortality. Quarantine was again enforced.



During the months of October, November and December seven cases were reported in Lagos from various ships, and four of them ended fatally.

In Europeans the disease presented, as a rule, all the classical features. Eight cases terminated fatally, and the pathological and post-mortem appearances confirmed the clinical diagnosis.

Of the three Syrians attacked, two died, and the third case (a female) though not fatal, was of a serious type.

Vomiting was a prominent symptom in each, and all the typical symptoms were observed in the fatal cases. The post-mortem appearances were characteristic of the disease.

In the native cases the symptoms were variable and far from typical, and, as a rule, not severe. There were no deaths. In several instances the disease was characterised by fever, jaundice, albuminuria, etc. Some cases were complicated by a concurrent malarial infection. Albuminuria was the most important symptom, and was present in every case. One of the most severe cases was detected during the routine examination of passengers travelling on the railway. This patient suffered from a moderate fever, and was apparently feeling so well that he was able to undertake a long journey.

The mildness of the disease in natives may, not unreasonably, be attributed to the possible fact that practically all are attacked in childhood.

In the Central Province two cases are reported from Warri, both Europeans, one of which ended fatally. At Forcados a European died on board a steamer, and the post-mortem revealed the characteristic appearances.

A case is recorded at Onitsha as having occurred in a native who recovered.

At Calabar in the Eastern Province a case is recorded as having occurred on board ship. The patient, a European, recovered.

As already stated, the Yellow Fever (West Africa) Commission are publishing a full account of the outbreaks at Lagos, together with a history of the cases by the Resident Medical Officer, Lagos Hospital, Dr. T. M. Russell Leonard, who continued the local investigations commenced, but not completed, by Dr. Wyler, who had been especially detailed for this work. I am unable to embody in this report an account of the investigation carried out by Dr. Wyler in the Central Province, as that officer left the Colony without having furnished his report. I understand, however, that he handed it in to the Yellow Fever Commission on his arrival in Europe.

As far as I can ascertain there is no reliable history of previous epidemics of yellow fever in the Colony or Protectorate. The late Sir Rubert Boyce, who investigated the subject here, formed the opinion that undoubted cases of yellow fever have occurred in the past in Lagos in the years 1894-95, and again in 1902-05, those in the latter period being well marked cases. He was also of the opinion that many mild cases occurred, and subsequent experience would go to prove the correctness of his views.

When it is realised that the *Stegomyia* mosquito abounds, it is not unreasonable to assume, taking into consideration the mildness of the cases which occurred amongst natives in the present epidemic, that the native in all probability suffers from a "mild type" of the disease, and that, therefore, yellow fever is endemic.



## TABLE OF YELLOW FEVER CASES, 1913.

## LAGOS EPIDEMIC.

	EUROPEANS.		SYRIANS.		NATIVES.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
First outbreak ... ..	2	1	—	—	4	—
Second outbreak ... ..	2	1	3	2	12	—
Third „ ... ..	1	—	—	—	4	—
Fourth „ ... ..	7	4	—	—	—	—
(Sporadic cases Oct., Nov. and Dec.)						
Total ... ..	12	6	3	2	20	—

## TABLE SHOWING CASES OCCURRING OUTSIDE OF LAGOS.

	EUROPEANS.		NATIVES.	
	Cases.	Deaths.	Cases.	Deaths.
Warri ... ..	2	1	—	—
Forcados ... ..	1	1	—	—
Lagos Roads ... ..	1	1	—	—
(Died at sea.)				
Onitsha ... ..	—	—	1	—
Calabar ... ..	1	—	—	—
Total ... ..	5	3	1	—

## SUMMARY.

				CASES.	DEATHS.
Europeans ... ..	...	...	...	17	9
Syrians ... ..	...	...	...	3	2
Natives ... ..	...	...	...	21	—
Total ... ..	...	...	...	41	11

### III.—SANITATION.

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#### ANNUAL REPORT ON SANITATION FOR THE YEAR 1913,

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#### INTRODUCTORY.

During 1913, which might be regarded as an outstanding year in the sanitary activity of Southern Nigeria, much advancement was made in developing, along permanent lines, sanitary improvements and organisation. The deep interest exhibited by His Excellency the Governor-General in all matters affecting the health of Europeans and natives was strongly reflected in all Executive Officials, and the good-will existing between them and the Medical and Sanitary Staff tended in no small degree to lighten the heavy burden of the latter, who not only act as advisers to the former, but aid largely in supervising the execution of important works.

#### I.—ADMINISTRATIVE.

##### (a.)—BOARDS OF HEALTH.

The sanitation of the Lagos Sanitary District, which comprises Lagos Island, Iddo, Ebute-Metta, Apapa and Victoria Beach, with a total population of 76,246, is controlled by the Lagos Municipal Board, which is composed of three official and five unofficial members appointed by the Governor, and presided over by a gentleman of wide colonial experience, who is also selected by the Governor.

Local Boards of Health, consisting of the District Commissioner, Medical Officer and such other persons as the Governor may nominate, have been established under the European Reservations Ordinance, 1902, at Sapele, Bonny, Egwanga (Opobo), Koko and Itu, and much useful work has been done by them.

Where no Boards of Health exist the “Local Authority” includes the Director of Public Works, the Senior Resident Officer of the Public Works Department, and in places where no such officer is resident the District Commissioner of the District.

##### (b.)—LAWS PASSED.

The following Ordinances, Orders in Council, Notices, &c., having a bearing on the general health of the inhabitants of Southern Nigeria, were passed during the year:—

1. By Order No. 1 of 1913 the Pawnbrokers' Ordinance 1913 was applied to the Sanitary Districts of Lagos and Calabar.
2. By Order No. 2 of 1913 the Petroleum Ordinance was applied to the Apapa Petroleum Magazine.
3. A notice published in the Gazette of the 29th January authorised the use of Ereko Dispensary as a vaccinating station instead of the extern department of Lagos Hospital.
4. Order No. 5 of 1913 defined the towns of Siluko and Koko under the Towns Ordinance, the former as the area lying within a radius

of one mile of the Factory of Messrs. MacNeil Scott & Co., at Siluko ; the latter as the area lying within a radius of one mile of Customs Wharf.

5. Order No. 8. provided for the cleansing of certain roads in Orlu sub-district.

6. On March 12th a notice was published in the Government Gazette, stating that on and after May 1st European Government Officials occupying Government quarters would be charged 2s. 6d. per month in respect of conservancy done at Government expense, but that an officer could make his own arrangements provided they satisfied the sanitary authorities.

Native Officials were charged 1s. per month each, as also were European Officials if more than two occupied one bungalow.

7. Order in Council No. 9 of 1913 brought the medical certificate of the cause of death into line with that used in England.

8. The Licensing (Amendment) Ordinance, 1913, exempted from the provisions of the Ordinance clubs whose main object was to promote outdoor games and athletic exercises.

9. On the 4th April, Native Council Rules were applied to the Eastern Province for the purpose of preventing the felling of oil palms to obtain palm wine.

10. Under the Prisons Ordinance, by Order in Council No. 12 of 1913, diet scales for European and native prisoners were published.

11. An Ordinance to prevent the sending of unseaworthy ships to sea was passed on the 15th May.

12. On June 26th the Towns (Amendment) Ordinance, 1913, was passed to provide for the identification of houses in Lagos by means of numbers.

13. On the 26th June, the Opium Ordinance, the Lagos Assessment (Amendment) Ordinance, and the Highways (Motor Traffic) Ordinance came into force.

14. By Order in Council No. 14 the Roads and Creeks Ordinance was applied to the cleansing and repairing of certain roads in the Eastern and Central Provinces.

15. Order in Council No. 15 defined the limits of the town of Calabar, the area comprised being 9·20 square miles.

16. A General Order dated 30th June stated that all officers would be held responsible for keeping in proper sanitary condition the government buildings and compounds under their charge.

17. On the 21st August, an Ordinance to provide for and regulate the imposition of Quarantine was passed, and has proved extremely useful.

18. The Minerals Ordinance, 1913, came into force on the 9th September.

It will be interesting to note the effect on the health of mining communities here, as soon as underground operations are really begun.

19. On the 30th October, by Order in Council No. 42 of 1913, the Towns (Regulation) Ordinance was applied to the following towns:—

Abak, Abakaliki, Afikpo, Aro-Chuku, Bansara, Brass, Eket, Ikot-Ekpene, Obudu, Ogoja, Okigwi, Orlu, Oron and Uyo.



On the same date by Order in Council No. 43 :—

Okpara Waterside, Alagigun, Kokori Waterside, Eku, Sanubi, Abraka, Kwale Station, Obiariku and Umutu, all in the Kwale District, were also placed under the Towns (Regulation) Ordinance.

20. The following Regulations were made under the Infectious Diseases Ordinance, 1908, on October 30th :—

1. Where any area has been declared to be infected, the Medical Officer may permit any person to remain in such area subject to the conditions stated in the permit in the Schedule to these Regulations.

2. Every person permitted to remain as aforesaid shall be given a permit as prescribed, signed by the Medical Officer. A copy of the permit is attached to this Report (page 149).

21. By Order in Council No. 44 of 1913 the Roads and Creeks Ordinance was made to apply to certain roads in the Afikpo District.

22. Order in Council No. 45, made under the Births, Deaths and Burials (Colony) Ordinance, authorised the payment of a fee of 5s. for every grave space (8 ft. by 4 ft.), but no fee would be charged for that portion of the cemetery used for free burials.

23. Under the Native Courts Ordinance, Native Council Rules were passed relating to the destruction of sasswood trees as follows :—

1. All sasswood trees shall be cut down and burned.

2. It shall not be lawful for any person to have in his possession any sasswood bark. Any person acting in contravention to this regulation shall be guilty of an offence, and on conviction liable to a fine of £5, or in default one month's imprisonment.

The rules applied to Ifon, Afuge and Owo.

24. Regulations applying to the port of Forcados were made on the 1st December under the Quarantine Ordinance, 1913.

25. On the 24th December, regulations were published applying to all vessels arriving at ports in Southern Nigeria.

#### (c.)—STAFF.

The following shows the composition of the Sanitary and Vital Statistics Staff in 1913 :—

- |     |                     |     |     |  |
|-----|---------------------|-----|-----|--|
| (a) | European            | ... | ... | One Senior Sanitary Officer<br>One Sanitary Officer.<br>Three Sanitary Inspectors.   |
| (b) | Native Office Staff | ... | ... | One First Class Clerk.<br>One Second Class Clerk.<br>One Third Class Clerk.<br>One Registrar of Vital Statistics.<br>One Deputy Registrar of Vital Statistics.<br>One Messenger. |

#### (d.)—NATIVE SANITARY INSPECTORS.

Western Province	...	...	4
Central Province	...	...	10
Eastern Province	...	...	10

Besides the above Native Sanitary Inspectors there were the following paid in the Western Province by the Railway and in the Central and Eastern Provinces from Native Court Funds :—

Western Province	...	...	3
Central Province	...	...	16
Eastern Province	...	...	7

The salaries of Native Inspectors ranged from £35 to £90 per annum, only two being regarded as sufficiently qualified to earn more than £50 a year. Two Caretakers employed at Bonny and Calabar respectively were each paid £18 per annum, and one at the Forcados Quarantine Station received £48 per annum.

#### (e.)—SANITARY INSPECTORS-IN-TRAINING.

His Excellency the Governor-General, recognising the necessity for employing a better educated and more intelligent class of native than is now designated by the title of Sanitary Inspector, had under consideration a scheme for the training of Sanitary Inspectors, and towards the end of the year, after a scheme for training was drawn up and approved, an advertisement was published in the Gazette for ten youths who had passed the Sixth Standard to undergo a three years' course of training under indenture.

These youths, while being instructed, will receive salaries at the rate of £35-5-£50, and will afterwards be offered positions in which they can advance, receiving year by year, according to ability shown, the same salaries as are being paid to Government Clerks.

#### (f.)—VISITS OF INSPECTION.

Through the necessity for one Sanitary Officer always to be present at headquarters, and the persistent appearance of yellow fever at one or other of the Coast Ports, with a frequently resulting Quarantine and its attendant circumstances, fewer places were visited in 1913 than would otherwise have been the case, yet strenuous efforts were made to reach as many important centres as possible, and the after-mentioned places were included in the itinerary, viz. :—Abo, Asaba, Onitsha, Idah, Awka, Ogwashi, Udi, Epe, Ejirin, Ijebu-Ode, Abeokuta, Warri, Forcados, Burutu, Bonny, Port Harcourt, Brass, Opobo, Degema, Eket, Ikorodu, and Calabar. Many of the above were visited on more than one occasion by the same or different officers, and the following places on the railway were inspected once or more, viz. :—Iddo, Ebute-Metta, Oshodi, Agege, Ekoré, Otta, Jako, Ifo, Arigbajo, Papalanto, Itori, Wasimi, Owowo, Alagada, Aro, Lafenwa, Arikola, Sanushi, Opeji, Eruwa Road, Oloke-Meji, Crossing Station, Ogunshileh, Ilugun, Adio, Moor Plantation, Ibadan, Oyo Road, Olodo, Lalupon, Odo-Oba, Iwo, Ilegbo, Origo, Ede, and Oshogbo. Reports were also sent in on Itu, Orlu, and Etehetim, which had been inspected towards the end of 1912.

#### (g.)—VOTES IN ESTIMATES CONTROLLED BY THE SANITARY OFFICER.

The General Sanitary Vote was put down in the Estimates for 1913 at £1,600, and out of this sum (a) six labourers at Badagry, nine at Epe, two at the Chemical Laboratory, Yaba, ten at Burutu and twelve at Ibadan were paid; (b) a Clayton disinfecter, costing £570 19s. 4d., was bought; (c) part of Ajasa swamp was reclaimed; (d) one incinerator was erected at Badagry; two dustbins at Sapele; a slaughterhouse and wash-place at Benin-City; two dustbins and two incinerators at Moor Plantation; three dustbins, three incinerators, one tool shed and one destructor at Ibadan; five dustbins and



one incinerator at Forcados; (e) the remainder of the money was spent in repairing drains, purchasing kerosene, rat traps, tools for labourers, and in carrying out minor improvements where required.

(h.)—SPECIAL ANTI-MOSQUITO AND YELLOW FEVER VOTE.

Apart from the General Sanitary Vote, a sum of £250 was included in the estimates for special anti-mosquito and yellow fever work, and when the latter disease appeared in Lagos and other ports in Southern Nigeria this amount was soon exhausted; but the Government was not slow to issue further supplies, and special warrants were issued on 28th July, 6th September, 11th October, 22nd October, 30th October and 8th December for £250, £400, £45, £50, £400, and £195 respectively, which sums, together with that originally voted, were spent on extra Sanitary Inspectors, fumigating and anti-mosquito gangs of labourers, materials for use in disinfecting houses and ships, and in providing for the needs of those people who were kept under observation at various places.

(i).—ESTIMATES.

A circular letter was issued from the Colonial Secretary's Office on the 15th May, 1913, conveying instructions with regard to the preparation of draft estimates, but owing to the fact that many of the Inspectors and labourers were paid from Native Court Funds, which would no longer be available for that purpose after 1913, some delay was experienced in obtaining the exact amount spent in each District from that source. However, draft estimates were made as early as possible, the actual amounts to be spent on Sanitary Inspectors and labourers showing a considerable increase over those of the previous year.

(j).—SANITARY EXPENDITURE.

The following table gives some idea of the sums spent out of sanitary estimates on the most important works, etc., during last year, but it is impossible to include the total sanitary expenditure, as large sums were paid from Native Court Funds, the details of which have not come forward. The expenditure of the Lagos Municipal Board is dealt with under Lagos:—

PARTICULARS.										Amount spent.		
										£	s.	d.
Mosquito-proofing	...	...	...	...	...	...	...	...	...	2,466	18	6
Special anti-mosquito and yellow fever work	...	...	...	...	...	...	...	...	...	1,406	18	7
Reclamation	...	...	...	...	...	...	...	...	...	4,562	13	2
Drainage	...	...	...	...	...	...	...	...	...	3,204	0	4
General sanitary	...	...	...	...	...	...	...	...	...	1,600	2	4
Disinfectants	...	...	...	...	...	...	...	...	...	337	16	8
Upkeep of Clayton disinfectors	...	...	...	...	...	...	...	...	...	73	3	4
Grants in Aid of European reservations, etc.	...	...	...	...	...	...	...	...	...	895	8	3
Sanitary improvements, Degema	...	...	...	...	...	...	...	...	...	191	13	3
Disposal of refuse, Calabar	...	...	...	...	...	...	...	...	...	200	0	0
Conservancy of latrines, Calabar	...	...	...	...	...	...	...	...	...	707	9	9
Native inspectors, labourers, etc.	...	...	...	...	...	...	...	...	...	1,625	9	3

## II.—PREVENTIVE MEASURES.

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### (a).—MOSQUITO- AND INSECT-BORNE DISEASES.

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#### (1).—ANTI-MOSQUITO WORK.

Since the introduction of the Destruction of Mosquitoes Ordinance, on the 4th August, 1910, its provisions have been gradually extended until now it is applicable to nearly all stations, but not to all townships, of any importance in the Colony and Protectorate, Boards of Health and Medical Officers of Districts being declared Sanitary Authorities for the purpose of carrying out its provisions.

A considerable impetus was given to anti-mosquito work in 1913 through the outbreak of yellow fever, and strenuous endeavours were put forth by Medical Officers in all districts to reduce the index to the lowest possible figure. This increased effort led in some cases to the raising of the index above that of the previous year, the result being entirely due to the better organization and training of the staff, and a more diligent search for larvæ.

The reduction in the total mosquito index from 11·1 in 1911 to 5·06 in 1912 and 3·77 in 1913 speaks eloquently enough of the work done, but the latter figure, small as it is compared with previous years, is much larger than it would be if we could omit from the list such places as Ibadan and Oshogbo, over which we have little control, and where the Sanitary Staff is as nothing compared to the size of the native town from which the index is taken.

It is to be regretted that some places show a slightly higher figure than in 1912, but more careful inspection accounts for nearly all increases.

The three important ports show comparatively small indices, the figures being 3·7 for Lagos, ·63 for Forcados and ·54 for Calabar.

The total number of notices issued under the Ordinance was 26,216, the number of prosecutions 2,528, and the total fines imposed amounted to £1,183 12s.

In the Sanitary District of Lagos 19,632 notices were issued, 1,060 persons were prosecuted and £364 in fines was collected.

The fact that all Government Officers are now held responsible for keeping in proper sanitary condition the Government buildings and compounds under their charge has been productive of good results, and much care is exercised in order that larvæ may not be found breeding on the premises.

No returns are yet obtainable from Abeokuta, which has a Health Officer and a few poorly trained Inspectors paid by the Native Government.

Mosquitoes are known to breed freely there, and it was from Abeokuta that we obtained our first case of yellow fever in a European, which afterwards proved fatal.

No doubt is entertained in our minds with regard to the desirability of having such a large and important town under good sanitary control, and it is to be hoped the day is not far distant when our wish may be realized.

To get rid of mosquitoes the chief sanitary measures adopted were drainage of pools and swamps ; reclamation of swamps ; destruction of larvæ



by various larvicides; searching for and removing where possible larvæ—containing receptacles; destroying mosquito eggs; mosquito-proofing tanks, wells and water-butts; cleaning and puncturing gutters; destroying adult mosquitoes by disinfectants and other means.

Great care was taken to impress upon those not already acquainted with our methods the necessity for storing, under cover, all vessels not in use which might retain water, or overturning them so that no water could enter, and for boiling once or twice a week Agbo pots which contain various concoctions which are given to children and invalids, and are fertile sources of mosquito-breeding.

#### ROOF GUTTERING.

Great attention has been paid to eaves gutters, for even though they are punctured in sagging places, it not infrequently happens that the holes are stopped up with putty or wood, or they become blocked with dirt from the roof, and a special gang of men has been found useful in keeping the gutters clean and the punctures open. Where possible gutters have been removed, as it has been found, on several occasions, that even though a tank is mosquito-proof, larvæ may be found in the water. Of course it is not possible for the adult mosquitoes to escape so long as the mosquito-proofing remains intact and there is no tampering with the manhole and overflow covers, but the real danger lies in the possibility of water containing larvæ being drawn from the tank and allowed to stand long enough in a house for the larvæ to develop into pupæ and eventually into adult mosquitoes.

#### BARRELS.

Forcados, one of the few towns where water has to be collected from the roof and stored, has been so well provided with barrels and tanks (the latter to all Government and merchants' employees), that almost every householder has one of the former, and such interest is taken by the people in this handy mode of storing water that but little trouble is experienced in getting them to make the necessary provision. If any person supplies a barrel suitable for mosquito-proofing, the Public Works Department does the work and fits the barrel with a good wooden tap for the small sum of 1s. 6d.

The barrels are so fitted that any heavy water receptacle can be placed on top and water poured out of it into the barrel without injuring the mosquito gauze or the woodwork, and the gauze is protected by a thick wooden lid, which though fitting tightly is easily removed when it is necessary to replenish the water-supply in the barrel. Sixty-three barrels were fitted in this way last year. This number seems small, but the native population of Forcados town is not large, and many have a tank supply.

In Lagos there are fewer barrels in use compared to the size of the population than at Forcados, as there is an ample supply of well water, though that is of poor quality; and all Europeans and many natives have mosquito-proof tanks. The number of barrels mosquito-proofed in Lagos last year was 234.

#### LARVICIDES.

Various kinds of larvicides have been used with advantage. In water-logged ground and water-retaining drains and ditches a solution of some strong disinfectant is found most useful till other measures can be adopted.

Swamps and large pools are kerosened twice a week, the kerosene being generally mixed with some other material, such as crude petroleum or creosote, to prevent its being used for other purposes. Crab-holes, which are very fertile mosquito breeding sources, are treated with a strong antiseptic solution or with tar or crude petroleum. About 95 per cent. of the crab-holes so

treated are not reopened, but it is hopeless in places more or less surrounded by swamps, to expect to get rid of them entirely.

Ships, launches, canoes and other floating craft are, when found to be breeding mosquitoes, treated with one or other of the larvicides in use and the water is emptied out.

#### RECLAMATION.

No reclamation was done in Lagos by dredgers during 1913, owing to the pumps being damaged; but at Forcados 15,836 cubic yards were deposited by the pontoon dredger "Barmaid," at a total cost of £1,041. In Lagos, as in many other places, reclamation by manual labour and by the deposition of material obtained by incinerating refuse was regularly carried out, with the result that much swamp has been converted into dry fertile land. All refuse in Lagos is disposed of in this way. The total sum spent on reclamation which was carried on at Lagos, Forcados, Burutu, Calabar and Opobo was £4,562 13s. 2d.

The contour of the land is constantly changing, and new lagoons and swamps are being formed, and it is found to be somewhat hard to keep pace with Nature in her destructive and constructive processes, but a strong endeavour is made to convert harmful swamps, in the neighbourhood of inhabited areas, into harmless and useful land, and this work is accomplished either by manual labour, by incinerators, or by the speedier and more scientific method of pumping sand into them by steam dredgers.

#### MOSQUITO-PROOFING.

A considerable sum of money is spent every year on mosquito-proofing, in whole or in part, quarters occupied by Government officers, and indeed no officer who wishes to be protected in this way is ever refused the privilege.

The total expenditure on this amounted to £2,466 18s. 6d. last year.

The whole trouble about mosquito-proofing a house arises from the difference in the tastes of the various officers who may occupy a certain bungalow at one time or another. It not infrequently happens that one officer has his quarters or a room mosquito-proofed, but the next occupier, thinking the house too hot, has the mosquito gauze frames removed, and it may be that the work has to be done and undone several times.

In a country like this, where so much depends on the health of its European inhabitants, a certain and sufficient amount of mosquito protection should be afforded to all, and should be maintained by Government irrespective of the whims and fancies of any particular individual.

It will be seen from Table No. 4 that since 1911 the number of wholly protected houses has been more than doubled, but the total figures for houses having any kind of mosquito-proofing are far below what they should be, and represent practically Government Officers' quarters.

Some merchants have had their bungalows mosquito-protected, but the gauze is generally removed or allowed to fall into holes, and it is seldom renewed, reliance being placed on cotton nets, which are easily torn and on inspection seldom show any attempt at repair.

#### MALARIA.

The number of cases of malarial fever has fallen by over 1,000 since last year, the decrease being entirely confined to the Western and Central Provinces, and showing a total diminution of 11·6 per cent. cases among Europeans and 16·4 per cent. among natives. The Eastern Province remained almost the same as in 1912.



The death rate due to malaria in 1913 was 4·2 per 1,000 cases treated among Europeans and 3·02 among natives, which is very gratifying as compared with 1912, when the rates of mortality were 5 and 3·1 respectively.

A chart showing the gradual fall in deaths from Malaria is attached.

BLACKWATER FEVER.

The record for blackwater fever cases shows an increase of five over that of the previous year, the number of European cases being the same for the Western Province, but increased by eight in the Eastern Province, which, although having only about half the European resident population of the former, had last year over twice the number of blackwater fever cases.

The cause of this is somewhat difficult to determine, but most of the cases came from the interior, where natives are less taught in sanitary matters, distances are great, and Europeans have to make long and arduous journeys.

It is interesting to note in this connection that in the Eastern Province more than double the amount of free quinine was issued last year, as compared with the previous year, when the number of blackwater fever cases was less than half, and in the Western Province, in 1911, when the free issue of quinine reached the maximum for the past three years, the number of cases of blackwater fever recorded was double that for 1912 and six more than in 1913 ; but no inference can be drawn from these figures, as sufficient details are not available to pursue the subject further. Of cases treated, 21·4 per cent. proved fatal, as against 17·4 per cent. in 1912.

QUININE PROPHYLAXIS.

In 1913, the amount of quinine issued free showed a considerable increase in the Central and Eastern Provinces, but a decrease in the Western Province, as will be seen from the figures given below, the total amount for the three Provinces being 52,402 grains less than in the previous year.

The value of quinine is being much more appreciated than formerly, and this truth is reflected in the decreasing number of cases of malaria ; and the only reasons one can give for the large decrease in the issue of quinine in the Western Province is that it is no doubt due to smaller quantities being doled out fresh each time it is required, and to a large number of officials and others providing themselves with the particular variety of quinine that suits them.

Grains of quinine issued free during the past four years :—

				1910.	1911.	1912.	1913.
Western Province	...	...	...	1,206,000	1,530,100	1,344,000	915,001
Central Province	...	...	...	140,532	229,963	355,448	407,484
Eastern Province	...	...	...	400,671	586,384	301,286	625,845
TOTAL	...	...	...	1,747,203	2,346,447	2,000,734	1,948,330

ANTI-PLAGUE MEASURES.

At the various ports in Southern Nigeria especially, rat destruction was constantly carried on. The majority are caught in traps, transferred to a strong antiseptic solution, inspected by a Senior Sanitary Inspector (but preferably by a European), and then taken to an incinerator and destroyed. In large stores and houses the Clayton machines are used to advantage. Most European houses are rat proof.

In Lagos the number of rodents caught and killed by Inspectors and labourers was 24,767, being a slight decrease on the previous year ; but during fumigation operations large numbers were killed and not included in the above figures. This was notably the case at Forcados, where, in some small houses, as many as fifteen rats were found dead after disinfection of the premises with sulphur.

### TRYPANOSOMIASIS.

One case of this disease was reported in the Western Province, but none was found in the Central Province.

In the Eastern Province in the Eket District 376 cases were discovered, and one was reported from Calabar.

The camp formed at Ikotobo in 1912 was still carried on. The entire enclosure covered an area of nearly 23,000 square yards, and there were 72 huts for patients, the number of whom varied from time to time, as the treatment was entirely voluntary. Each patient received a subsistence allowance, and his food was brought to him from the market.

A Medical Officer's house, a hospital, staff quarters and a school were also provided.

As I understand that a full report on this camp by the Medical Officer in Charge is being submitted, there is little further to add to what was said in 1912.

The prevalence of tsetse flies along the banks of streams and swamps in the Eastern Province is very alarming, but the amount of money required to clear the latter of bush and grass renders such an undertaking almost impossible.

### FILARIASIS.

The total number of filarial cases reported last year was only 63, as compared with 95 in the previous year.

The figures for the two years remained the same in the Western Province, but in 1913 there were 10 cases less in the Central Province and 22 in the Eastern Province.

The discovery by Dr. Leiper of the cause of the spread of *Filaria loa* by means of *Chrysops dimidiata* and *Chrysops silacea*, and a study of the life history and habits of these flies, may lead to the adoption of measures which will considerably lessen the number of cases caused by that parasite in future.

### YELLOW FEVER.

It was very unfortunate for Lagos that an epidemic of yellow fever should have occurred in 1913, but, thanks to the Government, timely warning had been taken from other ports along the Coast where epidemics had previously occurred, and we were not unprepared to meet this one and did so without any undue anxiety.

In August, 1912, on the outbreak of yellow fever in Dahomey, His Excellency the Acting Governor, in view of the possible introduction of the disease into Lagos, caused the European ward and several native wards of the hospital to be adequately mosquito-proofed, with arrangements for allowing individual isolation.



At the same time a number of mosquito-proof portable rooms 9 ft. by 10 ft by 8 ft. were made and kept in the store of the Public Works Department ready for erection anywhere, and during the epidemic of 1913 they proved extremely useful. These rooms can be set up in half-an-hour.

The new Infectious Diseases Hospital, which was built about two miles outside Lagos on the Ikoyi Plains, being mosquito-proof and containing ample provision for yellow fever cases during an epidemic, was utilized for the isolation of contacts, as the new Quarantine Station, which is built on the opposite side of the lagoon from Lagos, was at that time not ready for occupation.

After the visit of the late Sir Rubert Boyce in 1910, Lagos was divided into sections, and a sufficient number of Sanitary Inspectors was employed to allow of an inspection of every house and compound in Lagos at least once every week, and since that time this routine has been faithfully carried out, with the result that the mosquito index has fallen from Sir Rubert Boyce's estimate of about 100 per cent. to an average of 5·4 per cent. for 1912 and 3·7 per cent. in 1913.

This reduction has been very gradual, and has not been obtained without a great deal of perseverance and hard work, as the majority of natives are absolutely apathetic, and content to believe that, apart from the inconvenience caused by mosquito bites, the pests can do no harm.

In 1909, during the outbreak of plague on the Gold Coast, a quarantine station for native passengers was established on the West side of the entrance to Lagos Harbour, but as a result of the construction of a breakwater on that side the land on which it was built was rapidly encroached upon by the sea, and the place became unfit for further occupation, a new station of an improved type, begun in July and finished in August, being built on a better site some distance behind the old one.

As many detailed reports on yellow fever in Lagos and other places in Southern Nigeria have been written, I shall only briefly allude to a few of the more important points which concern us as Sanitary Officers.

The occurrence of yellow fever in Lagos covered three distinct periods, during the first of which only one case was reported, the patient, a European, without doubt becoming infected at Abeokuta. The two later periods, although separated by an interval of a month, were no doubt a continuation of the same outbreak.

The appearance of the disease naturally attracted special attention to it, and during the two weeks following the report of the first case, several Natives and one European were observed who exhibited symptoms which, while not sufficiently pronounced to warrant a definite diagnosis, were regarded as of a very suspicious character, and in the light of later events some of them could, no doubt, be considered as true cases of the affection.

During the whole outbreak of the disease 25 cases were found to have contracted the infection locally and 10 were introduced from without, the latter chiefly occurring on board ship.

#### FIRST PERIOD.

On the 12th of May, a European was admitted to Lagos Hospital suffering from fever which the same day was diagnosed as yellow fever, the Principal Medical Officer confirming the diagnosis, and at once reporting the case officially.

The patient, who was Agent for a Mercantile Firm, had been living in Abeokuta. He came down to Lagos on the 9th May and began to feel ill on

the 10th, when he was visited by the firm's medical adviser who directed him to remain in bed protected by a mosquito-net.

His symptoms, not then being of such a nature as to arouse a suspicion of yellow fever, rapidly developed, and on Sunday evening (the 11th May) became so serious as to necessitate his removal to hospital the following morning.

As the patient had, previous to his illness, been resident in Abeokuta for some months without ever having left the place, there can be no doubt as to the source of infection.

Immediately after the case was reported active measures were taken, the occupants of the house in which he lived while in Lagos being removed to the new buildings, known as the Technical School, on the Ikoyi Plains, where they were visited twice daily by a Medical Officer.

The house was then thoroughly sealed and disinfected by the Clayton process and by burning sulphur in pans, the work being satisfactorily carried out, as was clearly demonstrated by the fact that, when some hours later the door was opened, a considerable period of time had to elapse before any one could enter the premises, where nothing showing a sign of animal life could be seen.

The whole process of disinfection lasted nearly eleven hours, from 7 p.m. to 6 a.m., the house being a very large one.

Consequent on the diagnosis of yellow fever being made, information was telegraphed to Aro and Abeokuta, and immediate steps were taken to disinfect the premises occupied by the patient at the latter place, which, being the headquarters of an Independent State with its own Government, made it difficult for anything more to be done.

His Excellency the Governor in Executive Council declared an "infected area" under the Infectious Diseases Ordinance 1908, and as soon as possible after this declaration a cordon of Police was placed round the area. Residents within it were granted free egress and ingress, but no stranger was admitted inside the cordon until all disinfecting operations which were carried on in the stores, outhouses, and private houses surrounding the infected premises had been completed.

While preparations for disinfection were being carried on, the houses in the area were carefully inspected and all refuse and water were removed.

Extra men were engaged as Sanitary Inspectors and labourers, and the whole district in which the infected house was situated was thoroughly gone over by gangs of men under a Sanitary or Medical Officer, each compound being visited and cleaned up three times a week for the three succeeding weeks.

In order to facilitate the observation of natives and to make careful enquiries regarding any sickness in the district, the Principal Medical Officer deputed a Native Medical Officer to devote his whole time to carrying out this most useful work, which also was continued daily for three weeks.

As a result of the daily inspections we felt satisfied that no secondary cases had arisen, and it was hoped that nothing more would be seen of the disease in Lagos; but on the 14th, 15th and 16th of May three patients were admitted into hospital from different parts of the town, viz.:—Bangbose Street, Customs Street and Apongbon Street, each case being, as far as could be ascertained, distinct from the others. Later, a fourth case was discovered, the man being found to have come across the Lagoon from Apapa.



All these patients exhibited symptoms of a suspicious nature, but it was decided to regard them merely as suspicious cases, there not being sufficient evidence to warrant a true diagnosis of yellow fever.

On the 28th of May, a European Engineer from the Branch Boat "Epe" was received into hospital, and as he also presented very suspicious symptoms it was decided to disinfect the vessel the same night.

#### SECOND PERIOD.

During June no case appeared in Lagos to give any cause for anxiety, but on the 16th of July a European, belonging to the Bank of British West Africa, and living on the premises, was admitted into hospital, the case being diagnosed as yellow fever.

An infected area was declared, which on the 21st of July was extended on account of the disease appearing in a house occupied by Syrians immediately outside the area.

Precisely the same procedure was, at first, adopted in each case, viz. :—

- (a) Declaration of an infected and an evacuation area.
- (b) Establishing a police cordon round the infected area.
- (c) Removing all persons within the evacuation area to places where they could be kept under observation or surveillance as the case might be.
- (d) Disinfecting the infected and evacuated premises by sulphur.
- (e) Daily visitation by a Native Medical Officer of all persons within the infected area.
- (f) Regular and systematic inspection and clearing of all compounds, and collecting larvæ and mosquitoes to forward to the Medical Research Institute for identification. *Stegomyia* were found in all infected areas.
- (g) Visiting twice daily those under surveillance, and isolating the sick.

As a result of the appearance of the second case the port of Lagos was declared to be an infected place, and every precaution was taken to prevent spread of the infection either within Lagos or to outside places.

Instructions with regard to passengers and others travelling by ships, launches, lighters or trains were promptly drawn up and published. All passengers leaving Lagos were examined, and if found to show no symptoms of infectious or contagious disease were given a certificate to that effect. Any person arousing suspicion was detained and kept under observation till the symptoms disappeared. All launches and lighters were disinfected before leaving the port.

Messrs. Elder Dempster & Company's Agent at first refused to take third class passengers, but persons wishing to travel first or second class were accepted on the production of a health certificate stating they were free from symptoms of infectious disease.

The vessels of the Woermann Linie gave up calling at Lagos on account of the stringent regulations enforced against them at other ports, but, later on, again began to call, accepting only first class passengers homeward bound.

The extra Inspectors and labourers employed were carefully organised and supervised by as many Medical Officers as could be spared for a time by the Principal Medical Officer.



After the appearance of yellow fever in a Syrian, a complete list of Syrians living in Lagos was drawn up. All were kept under careful surveillance, and were pleased to have such a keen interest taken in their welfare.

On account of the necessity for very careful house-to-house visitation and inspection, the Governor's Deputy asked for volunteers to assist in carrying out this work, and this call met with an immediate and ready response from members of every department.

With the kind assistance of Major Guggisberg—the Director General of Surveys—the town was mapped out into areas, and each department was allotted a definite portion in which to work, the size of the area being calculated according to the number of men available. An interpreter and one or two labourers accompanied each man.

The amount of good done by these volunteers was at once evidenced by the increased work which fell on the Municipal Scavenging Department, and it was some little time before the equilibrium was again established. This special work was continued for a fortnight, and the Governor's Deputy and all who partook in it deserved the greatest credit for the unflagging interest they displayed.

All ships in the port received instructions to anchor in mid-stream between the hours of 5 p.m. and 6 a.m.

In order to facilitate the transport of cargo between Lagos and Forcados, arrangements were made at the latter port to disinfect all local vessels coming from Lagos, as soon as possible after their arrival, and a Medical Officer was specially sent to assist in carrying out the work.

After disinfection of the ship, the crews were kept under observation on their vessels, which were allowed to work cargo alongside the mail steamers between the hours of 7 a.m. and 5 p.m.; but later this embargo was withdrawn so as to enable them to work night and day, if necessary.

In connection with the first and extended area, seven cases of yellow fever occurred, the last, that of a European in the Bank, occurring on July 26th.

Case 12 was a patient from this area who was under surveillance with his master, and caused the declaration of the Balogun Street area on July the 26th, through his having slept there at night.

Case 13 was a policeman at Apapa, who, as far as we could ascertain, had not been in Lagos for some time.

The police buildings there, occupying an area by themselves, were easily dealt with, and a few bush huts were burned down.

Cases 14, 15 and 17 were isolated cases in widely separated spots.

The Offin Road area, where case 17 occurred, is a very densely populated part of the town, the buildings being native huts set closely together, some being in a very dilapidated condition and so dark that many of the rooms never get any light at all, thus causing us to resort to using electric torches to find our way about.

Disinfection was carried out as satisfactorily as was possible, but about seven weeks later another case appeared in the area.

The women and chiefs of the town, becoming dissatisfied because some of their people were kept under observation, although they were well fed and looked after, requested an interview with the Governor's Deputy, complained

of the hardship of compulsory removal to Ikoyi, and asked that other arrangements might be made. The Governor's Deputy thereupon arranged that all persons belonging to an evacuation area should in future be kept under surveillance under the guarantee of the chiefs, and this method was found to work very satisfactorily, the evacuated people living with their friends near the area.

Cases 18 and 19 occurred in one area, the the latter occurring two days after the former.

Case 20 was a native employed on the s.y. "Ivy," but had a house in town in which he had been living while on shore. The yacht, therefore, had to be disinfected and all on board kept under surveillance.

Case 22 occurred in the oldest portion of the town and in one of the most populous areas. If the case had not occurred in a policeman it is doubtful if we should ever have heard of it.

In this case the system of keeping all the people in the declared area under surveillance was begun, and they attended for examination at a Vaccination Station twice daily for five days.

After the first day or two, when the people saw that if they failed to appear for examination they would be sent to Ikoyi Isolation Station, they attended very regularly.

Case 23 occurred in an area in which no case had previously been found.

This patient was isolated on the 1st of September, and as no further case was reported before September the 16th, quarantine restrictions were removed on that date.

### THIRD PERIOD.

The first case of this period occurred on the 19th of September, in the area where case No. 17 appeared and close to the seat of the suspicious case No. 4.

On the appearance of a second case not far from the Bank site on the 30th of September, Lagos was again declared an infected place, and the same routine was practised as on the previous occasion.

Case 26 appeared in a comparatively fresh area, but not a great distance from case No. 23, while No. 28 occurred in an area which had been declared infected in May.

This completes the non-imported cases, and a glance at a map will show how closely they were linked together, even though, in most cases, a very varying period of time had elapsed between their occurrence, except in cases 8, 9, 10 and 11, which followed consecutively, as did cases 18 and 19.

It may be remarked here that cases 9, 10 and 11 were under observation at the Isolation Station when the symptoms appeared.

As no other case was reported which had been locally infected after the 16th of October, the quarantine restrictions were removed on the 5th of November.

### IMPORTED CASES.

Case 1, which came from Abeokuta, was the first imported case, and has already been dealt with.

Case 21 was that of a Yoruba who had been resident in Ogbomosho for three months previous to his illness. He came by train from Ibadan to Iddo, and the Medical Officer, inspecting the passengers there, found he had a



temperature and sent him into hospital, where his disease was diagnosed as yellow fever.

Case 27 was that of a policeman from Onitsha who was bringing a prisoner to Lagos. He stayed a week in Forcados, and arrived in Lagos by steamer on the 16th of October.

Cases 29, 30 and 31 occurred on board the German ship "Elizabeth Brock," which arrived in Lagos Harbour on the 24th of October, the first case proving fatal on the 26th of October.

The ship had just finished a round trip in which she visited Forcados, Calabar, Degema, Opobo, Bakana, etc., some of the latter three ports, no doubt, being responsible for the infection.

It may here be stated that when a ship had become infected or had been in direct communication with an infected ship or shore, careful disinfection was carried out, and the crew and passengers were kept under observation or surveillance.

Case 32 was the Chief Officer of the s.s. "Bassa," which had been at Forcados from the 8th to the 23rd of November, returning to Lagos on the 24th of November. This patient, who was undoubtedly infected at Forcados, died on the day of his admission to hospital, viz., the 26th of November.

On board the s.s. "Baro," just arrived from Forcados, an Engineer (case 33) complained of being sick, and was admitted into hospital on the 29th of November.

This patient also no doubt was infected at Forcados, where he had fever four days previously.

From the s.s. "Montenegro," which was lying at Iddo Wharf, a European was taken on the 24th of December and sent to hospital, but he died on his way there, a diagnosis of yellow fever having been made and corroborated by a post-mortem examination. The ship had been seven days in Lagos Harbour, so there can be little doubt as to where the infection took place.

The last case of the year came from the s.s. "Nyanga" on the 28th of December. The ship had been lying off Wilmot Point from the 23rd of December. The last port of call before reaching Lagos was Oron, where the ship arrived from Calabar on the 19th of December, having left the latter port on the 18th of December.

As the patient, the third officer, had not been ashore at Lagos, in all probability the infection was contracted at Oron. There was no sickness among the native crew.

During the period in which cases of yellow fever were found in Lagos almost 1,000 houses were disinfected, and each house contained, on an average, five rooms.

The number of ships, launches and barges disinfected amounted to about 300.

There were over 6,000 persons kept under surveillance, and 800 under observation.

A very large number of persons wishing to travel by steamer or by train were examined, but the exact figures are not obtainable.

The work of visiting ships and boarding trains to inspect passengers was greatly facilitated by the kind co-operation of the Marine and Railway Departments, which issued the necessary instructions to their officers, who took the keenest interest in carrying them out.



## CASES OUTSIDE LAGOS.

Of cases which occurred outside Lagos one was reported from Onitsha, one from Forcados, two from Warri and one from Calabar.

The death of the fourth officer of the s.s. "Elmina," which occurred on the 23rd of October in Lagos Roads, was reported, but no post-mortem examination could be held, the body being buried at sea. The s.s. "Elmina" had been lying at Forcados for a week, and the patient was sick for four days.

The case at Calabar appeared on the s.s. "Monrovia," the man being an able seaman who had not been ashore at this port. The patient was screened in hospital on the 26th of October, and rapidly recovered. The infection was believed to have taken place at Forcados.

At Warri, where two cases occurred and were promptly isolated in hospital, one appeared on the 22nd of May, the patient, a European, dying on the 26th, and the other on the 10th of June, the patient recovering. The port of Warri was declared to be an infected place on the 13th of June, after a definite diagnosis of the second case had been made.

The precautionary measures carried out at Warri were as follows :—

(1) *After the first case occurred.*

(a) The occupied premises were fumigated ; all European bungalows were inspected and faults in mosquito proofing were remedied, new mosquito gauze being added where required in hitherto unprotected places.

(b) Special investigations were made in the district for cases of fever.

(c) The sanitary staff in Warri was increased, and inspection of all premises rigorously carried out, the mosquito index being reduced to 2 per cent.

(d) Various recommendations were made for the conduct of traffic and the working of cargo.

(2) *When the second case was diagnosed an infected area was declared, and the port was placed in Quarantine.*

(a) Fumigation of all houses, buildings, sheds and huts within the infected area was thoroughly carried out.

(b) Regular and systematic inspections were made with a view to destroying mosquito-breeding places.

(c) The clearing of all undergrowth, grass, weeds, etc., was undertaken.

(d) European contacts were isolated on a steamer anchored two miles away, and they were visited by the Health Officer twice daily.

(e) All natives from the infected area were sent to the Quarantine Station at Forcados.

(f) Native passengers were prohibited from travelling on launches.

(g) Steamers had not entered or left the port since quarantine was declared.

(h) Government Launches which were engaged on necessary work were sent to Forcados Quarantine Station, where the crews were isolated and the launches disinfected.

(i) All prisoners in Warri were inspected daily.

(j) Various recommendations were put forward for improving the sanitary condition of Warri.

The Acting Sanitary Officer, Dr. Clark, was sent to Warri on the 28th of May to assist in carrying out preventive measures, and the Senior Sanitary Officer, who had been extremely busy in Lagos, proceeded to Warri after the appearance of the second case.

The fact that no further cases occurred bears sufficient testimony to the good work done by all Medical and Sanitary Officers in Warri during this trying time.

Forcados, which was the source of a good deal of suspicion, was visited by the Sanitary Officer on the 24th of October, an infected area having been declared there on the 20th of the same month.

The object of the visit was to carry out practical measures to prevent spread of the infection, and to endeavour, in co-operation with the Medical Officers, to render the port as healthy as possible.

The work resolved itself into—

- (a) Disinfecting the entire town; and concurrently with this
- (b) Discovering and destroying mosquito-breeding places.

The disinfection of houses, stores, ships, launches, lighters, etc., caused but slight inconvenience to the people, and though nearly all were unacquainted with what they called "Quarantine," no opposition was experienced, and they soon learned to appreciate its value, many indeed asking that their houses should be disinfected long before we could reach them.

Sulphur, burned in pans made from oil drums, was the chief substance used, each house or ship being carefully sealed up, and for this purpose large baft sheets and plenty of paste and brown paper were brought into requisition to make the disinfection thorough.

Besides being disinfected with sulphur, all houses and ships were carefully cleaned, and the floors or decks scrubbed with strong solutions of disinfectants. A large number of native houses were lime-washed or painted after fumigation was completed.

What struck the natives most particularly, about the disinfecting process, was the large number of rats and cockroaches killed.

This object lesson will, I believe, make the native of Forcados always willing to put his house at our disposal when disinfection seems to us necessary.

The number of houses treated at Forcados was 158, the separate rooms amounting to 844.

The huts of native towns, which received a great deal of attention, are not included in this estimate.

Many ships were disinfected and this was chiefly done by Dr. Bailey and Dr. Sieger.

Similar measures to the above were carried out by Dr. O'Dea at Burutu, the result of the combined efforts being the disappearance of even suspicious cases for the rest of the year.



Regulations applicable to Forcados alone, dealing with outward-bound ships and other floating craft and their passengers, were issued on 1st December, and other regulations, dealing with vessels arriving at ports in Southern Nigeria, came into force on the 24th of December.

The following table gives a brief summary of the cases which came under observation during the year :—

	Yellow fever.	Suspicious.	Local infections.	Introduced from without.	Nationality.	Death.	Recovery.	Total.
PART 1.								
Europeans ...	2	1	1	1	European ... 2	1	1	2
Natives ...	4	4	4	—	Yoruba ... 2	—	2	4
					Effik ... 1	—	1	
					? ... 1	—	1	
Total ...	6	5	5	1	6	1	5	6
PART 2.								
Europeans ...	2	—	2	—	British ... 2	1	1	2
Syrians ...	3	—	3	—	Syrians ... 3	2	1	3
Natives ...	12	1	13	—	Yoruba ... 6	}	12	12
					Kroo ... 4			
					Beni ... 1			
					Sobo ... 1			
Total ...	17	1	18	—	17	3	14	17
PART 3.								
Europeans	8	—	1	7	British ... 5	3	2	} 8
					German ... 3	1	2	
Natives ...	4	—	3	1	Yoruba ... 3	}	4	4
					Ibo ... 1			
Total ...	12	—	4	8	12	4	8	12
Grand Total	35	6	27	9	35	8	27	35

#### BRIEF SUMMARY OF EVENTS OCCURRING DURING THE YELLOW FEVER OUTBREAK IN 1913.

1. Wilberforce House area declared infected ... 12th May 1913.
2. Infected area declared at Warri ... 13th June 1913.
3. Port of Warri declared infected ... 13th June 1913.
4. Port of Accra declared infected ... 16th June 1913.
5. Marine Notice to Pilots to observe the Quarantine Regulations with regard to Warri issued ... 14th June 1913.
6. Marine Notice as in 5 with regard to Accra ... 17th June 1913.
7. Warri declared free from infection ... 30th June 1913.
8. Case reported at Quittah ... 4th July 1913.
9. Bank area declared infected ... 18th July 1913.
10. Bank area extended ... 21st July 1913.



# PLAN OF TOWN OF LAGOS

REVISED TO AUGUST, 1911.

SCALE 12 CHAINS (792 FT) TO ONE INCH.  
LINKS 100 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 CHAINS

## NOTES

Tramways  
Motor Roads (Proposed)  
Wells  
Boundaries of Districts  
Longitude of Lagos Observatory 3° 23' 49" 8"  
Latitude 6° 26' 41" 2"

## ABBREVIATIONS

A.D.T.C. African Direct Telegraph Company  
A.G. Attorney General  
B.B.W.A. Bank of British West Africa  
C.F.A.O. Compagnie Française de l'Afrique Occidentale  
C.M.S. Church Missionary Society  
D.P.W. Director of Public Works  
E.D. & C. Elder, Dempster and Company  
Mkt. Market  
M.O.H. Medical Officer of Health  
N.C.O. Non-Commissioned Officers  
P.W.D. Public Works Department  
P.M.O. Principal Medical Officer  
P.Z. Paterson Zochonis  
S.M.O. Senior Medical Officer  
W.A.F.F. West African Frontier Force  
W & B. Witt and Busch

Contours in feet







BRIEF SUMMARY OF EVENTS OCCURRING DURING THE YELLOW FEVER  
OUTBREAK IN 1913—*continued*.

11.	Port of Lagos declared infected ... ..	21st July	1913.
12.	Instructions issued with regard to the examination of passengers by railway or water and the disinfection of floating craft ... ..	21st July	1913.
13.	Balogun Street area declared ... ..	26th July	1913.
14.	Sapele Mail Launch Service stopped ... ..	28th July	1913.
15.	Destruction of Mosquitoes Ordinance extended to several outlying towns ... ..	28th July	1913.
16.	Strachan Street area declared infected ... ..	30th July	1913.
17.	Apongbon Street area declared infected ... ..	6th August	1913.
18.	Notice issued stating "crews of all vessels proceeding outside the Lagos Harbour to be examined" ... ..	6th August	1913.
19.	Vessels ordered to anchor in mid-stream between 5 p.m. and 6 a.m. ... ..	6th August	1913.
20.	Balbina Street area declared infected ... ..	12th August	1913.
21.	Catholic Mission Street area declared infected...	18th August	1913.
22.	New Quarantine Ordinance in force ... ..	21st August	1913.
23.	Ebute Ero area declared infected ... ..	30th August	1913.
24.	Massey Street area declared infected ... ..	2nd September	1913.
25.	Port of Lagos declared free of infection ... ..	16th September	1913.
26.	Sapele Mail Launch Service resumed ... ..	22nd September	1913.
27.	Apongbon Street area declared infected ... ..	25th September	1913.
28.	Tinubu Street area declared infected ... ..	4th October	1913.
29.	Port of Lagos again declared infected ... ..	4th October	1913.
30.	Instructions issued on 21st July reprinted ... ..	4th October	1913.
31.	Sapele Mail Service again discontinued ... ..	6th October	1913.
32.	Vessels again ordered to anchor in mid-stream between 5 p.m. and 6 a.m. ... ..	6th October	1913.
33.	Case on board the s.s. "Zaria" at Forcados ... ..	13th October	1913.
34.	Oke Popo area declared infected ... ..	15th October	1913.
35.	Lafiaji area declared infected ... ..	20th October	1913.
36.	Yellow Fever area declared at Forcados ... ..	20th October	1913.
37.	Wilberforce House area again declared infected	20th October	1913.
38.	Three cases occurred on board the s.s. "Elizabeth Brock" ... ..	26th October	1913.
39.	Lagos declared free of infection ... ..	5th November	1913.
40.	One case reported from s.s. "Bassa" ... ..	26th November	1913.
41.	One case on board the s.s. "Baro" ... ..	29th November	1913.
42.	Regulations under the Quarantine Ordinance published for Forcados ... ..	1st December	1913.
43.	One case on board the s.s. "Montenegro" ... ..	24th December	1913.
44.	Regulations applying to vessels arriving in Southern Nigeria published ... ..	24th December	1913.
45.	One case on board the s.s. "Nyanga" ... ..	28th December	1913.



### EPIDEMIC DISEASE.

As already stated, the only disease which assumed epidemic form during last year was yellow fever, and the outbreak was largely confined to the town of Lagos.

Nearly all diseases of an infectious nature showed a fall in the number of cases, but there appeared an increase in the number of cases of dysentery, due chiefly to its introduction into Okigwi Prison from outlying villages; but this could hardly be regarded as an epidemic, and it was speedily overcome. (*See under "dysentery."*)

The following list gives the number of outbreaks of infectious disease reported under the Paris Convention, 1912, from places outside Southern Nigeria :—

Disease.		Place.		Date report received.
Yellow fever	...	Grand Popo	...	February 2nd.
"	"	Gold Coast	...	February 2nd.
"	"	Accra	...	March 12th.
"	"	Accra	...	June 16th.
"	"	Quittah	...	July 4th.

### PLAGUE AND CHOLERA.

No plague or cholera case was reported from outside during 1913, and nothing of a suspicious character came under observation in the Colony or Protectorate of Southern Nigeria.

### SCARLET FEVER.

One case of scarlet fever was reported in a European at Okigwi, and it is believed the disease is found to some extent among natives there.

### ENTERIC FEVER.

One case of enteric fever was reported from Calabar and one from Sapele, but that there was no spread of the infection speaks well for the precautions taken by the Medical Officers concerned in the treatment of cases.

### VARIOLA.

Seventeen cases of variola came under treatment as against 52 in the previous year, showing that good results have accrued from the large number of vaccinations performed.

### VACCINATION.

In a great many places parents have become so accustomed to visits from the Medical Officers that they readily submit their children and themselves for vaccination, and the good feeling existing between Political Officers and people goes a long way in helping on this good work.

On counts being made in several markets, the percentage of children successfully vaccinated was found to be 50, and of adults 60.

### VARICELLA.

Chicken-pox in the Eastern and Western Provinces has been reduced by half, but the Central Province shows a considerable increase, the cases at Sapele and Warri being more than doubled. It is fortunate that the mortality from such cases is extremely low.

## RABIES.

No case of rabies was reported in 1913.

## DYSENTERY.

The number of cases of dysentery shows a slight increase, and as previously pointed out, this was chiefly due to the introduction of the disease into Okigwi Prison from outlying villages from which prisoners were brought. These prisoners came from Orgu and Oduma, where the water supply is simply stagnant pools into which surface water drains.

The people do not plant sufficient yams to last the whole year, and food becomes scarce before the new yams are ready, the result being that the people are of very poor physique and are unable to withstand any adverse conditions of life.

After the disease manifested itself all new prisoners and suspected cases were isolated and their stools were examined, as they made every effort to conceal the disease. Great care was taken to disinfect stools and to provide suitable food and sterile water, and the sickness speedily terminated.

Prisoners are very liable to suffer from this disease, and the greater number of the cases that occur each year is due to introduction from places without, where bad water supply, poor food and exposure are important factors in its causation. All water for prisoners is rendered sterile and kept in drums fitted with taps and good covers.

## VENEREAL DISEASE.

It is interesting to observe that there is a marked reduction in the number of cases of venereal disease, but unfortunately this may not be indicative of a general fall throughout the country. The fact that fewer cases of secondary and inherited syphilis have presented themselves would make it appear that the results of treatment are to some extent satisfactory.

## TUBERCULOUS DISEASE.

That there has been a marked increase in tuberculous patients is alarming, but it is just possible that with the more careful diagnostic methods in use at present a large number of cases formerly relegated to bronchitis and other allied diseases are now included under this heading. The increase, which is very marked, is six times that of 1912, and was confined entirely to the Central Province.

It has been proposed to erect a sanatorium at Ibadan for consumptive prisoners, who form a fair proportion of the total number of the cases recorded. This will prove useful, not only as an institution for treatment, but as a means of preventing spread of the infection.

## HELMINTHIC DISEASES.

The number of Helminthic cases treated last year showed a great decrease on the records of the previous year.

## ASCARIS LUMBRICOIDES.

As usual, Ascarides account for the vast majority of parasitic worm diseases, and it is just possible that few natives are free from them, though there has been a steady reduction in the number of patients treated since 1911.



Ibadan, Lagos, Calabar and Sapele are the places which show the largest proportion of cases, Ibadan and Lagos accounting for 75 per cent., and Calabar and Sapele for 15 per cent. of the total number.

Improvements in the mode of living and the introduction of good water supplies are essential to the reduction of this disease, but natives are hard to reach in these matters, and it will require long years of perseverance and patience to teach them how to protect themselves against it.

#### DRACUNCULUS MEDINENSIS.

Guinea worm shows a slight decline on the previous year, but, as with other worm diseases, altered sanitary conditions alone can effect marked improvement.

#### BILHARZIA.

No case of Bilharzia was recorded, but it is well known that the disease exists, though it is not very prevalent, and when present occasions little inconvenience to the patient.

#### ANKYLOSTOMIASIS.

Only half the number of cases of this disease were reported last year: Lagos and Ibadan in the Western Province; Forcados and Onitsha in the Central Province; and Calabar and Opobo in the Eastern Province being responsible for 179 cases out of a total of 212, which is 84 per cent. It cannot be doubted from the returns that are received year by year that ankylostomiasis is more prevalent and widespread than the records of any one year appear to show. When cases are discovered the utmost precautions are taken to prevent spread of the infection.

### III.—GENERAL MEASURES.

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#### SEWAGE DISPOSAL.

(a) In Lagos alone is there anything approaching a sewage system, and this is as yet confined to a very small part of the town. The object of this drainage or sewage system, in the absence of a better one, is to provide a type of drain which will deal effectively with flood water and give a self-cleansing velocity for a dry weather flow of liquid filth. Nightsoil is not disposed of in this way, and will be considered later.

The type of drain in use is that recommended by Professor Simpson on his visit to Lagos in 1908, the size of the drains varying with the requirements of the locality and increasing in capacity until the outfall is reached.

(b) The methods of nightsoil disposal vary to some degree in different places.

In Lagos, the pail system is carried out in a certain well-defined area, which covers 117 of the total 1,500 acres in the Lagos Sanitary District, but that includes almost the entire area occupied by Europeans.

Besides this area all the land latrines scattered throughout the District are provided with odour-proof sanitary pails.

That part of the population which does not use land latrines in the ordinary way and is outside the defined area, either uses water latrines or



provides itself with oil drums and other receptacles which are emptied into the latrine buckets or through a water latrine.

The sanitary pails are collected by contractors and conveyed to depôts specially built for their reception, and from thence they are carried by steam tram to a dejection jetty placed well outside the town. They are there emptied into deep water, and are washed and conveyed back to the depôts by tram. In this way about 6,000 tons of nightsoil were dealt with in 1913.

As Lagos Harbour now accommodates very large ships, it is not unlikely that the above method of nightsoil disposal may have to be abandoned in favour of a more comprehensive scheme.

In other coast places and towns on the banks of large tidal rivers, nightsoil is taken out into the stream in pails and dumped on an ebbing tide.

In inland towns, where Europeans reside, nightsoil is put into shallow trenches, which are dug and covered in daily, and are well away from houses and to the leeward of them.

### REFUSE DISPOSAL.

The method of disposing of refuse, wherever possible, is by burning the combustible material and burying in trenches or pits the incombustible refuse.

During the past year the number of simple oblong and conical incinerators has been increased, and it is our object, especially in low-lying marshy places, to extend this method of disposal, using the burned and incombustible material for land reclamation.

Where it is cheaper or more expedient at present to dispose of refuse by dumping it into the sea or a large river, that method is adopted ; but in places where no large expanse of water is at hand the whole of the material is buried in pits. Though decomposition of the refuse rapidly takes place, this latter method is not encouraged, for the reason that, if pits are used, they are liable to be left open for long periods without a covering of earth being thrown over the refuse.

About 200 tons of refuse collected from dustbins is treated in Lagos daily by incinerators erected at suitable sites at the back of the town.

It is felt that the open type of incinerator at present in use must gradually be replaced by the closed type, and indeed in some places, such as Forcados, Burutu and others, simple conical incinerators have been built with good results.

### WATER SUPPLY.

The Iju and Adiyari Water Supply Scheme being carried out by Mr. Peet, Director of Public Works, for the Sanitary District of Lagos and other places on the pipe-line, is rapidly nearing completion, much progress having been made during the last year, and it is confidently expected that before the end of 1914 Lagos will no longer be dependent on roof-gutters, tanks and wells, and that many of the diseases derived from the latter source will show considerable diminution at no far distant date, and the high death rate, especially among children, be markedly diminished.

The Calabar water extension scheme mentioned in the 1912 Report is likely soon to be carried out.

The extension of the Ibadan water supply, at present confined to the Railway Employés and engines, is receiving attention. This, if carried out,

would prove a great boon to the soldiers and merchants, who chiefly would benefit.

The Ibadan Residency water supply has been much improved.

The Oshogbo water supply is used by the merchants and others when their tank supply runs out.

The water supply at Abeokuta has now been turned on. His Excellency the Governor-General was present at the opening ceremony.

The supply at Itu remains the same as in previous years.

Many of the smaller stations and a few of the larger ones are supplied from springs which are well protected from surface contamination.

Lagos at present derives its supply from tanks and shallow wells, most of the latter being contaminated, as it is found almost impossible to protect them.

In Lagos alone there are 88 public and 1,065 private wells, and in Ebute Metta, which forms part of the Sanitary District of Lagos, there are 13 public and 1,065 private wells. Few wells are mosquito-protected.

The number of tanks in Lagos and Ebute Metta was 702, and the number of water butts 1,078, of which 326 were mosquito-proofed, 234 being done during 1913.

## FILTERS.

Instructions were drawn up for the cleansing of filters, and were widely distributed by the Principal Medical Officer, but most people delegate to their servants the most important duty of keeping their filters clean, which is sometimes attended with disastrous consequences.

## DRAINAGE.

### (a).—SUBSOIL DRAINAGE.

This important subject has hitherto received little attention from engineers in Southern Nigeria, and only an extremely small area of land has been so drained.

The subsoil drainage of the Race Course in Lagos, which was modelled after a scheme by Mr. Wright, Municipal Engineer, and carried out by the Public Works Department, has, so far, proved a great success, and could with equal advantage be extended to many other low-lying areas here and in other towns.

After the reclamation of the remaining swamps of the Island of Lagos is completed, it is to be hoped a continuation of the same scheme may be carried out.

### (b).—SURFACE DRAINAGE.

In discussing the disposal of sewage, I briefly referred to the drainage of Lagos, which, before the introduction of the Simpson type of drain, with its variation in size according to requirements till the outfall is reached, was solely carried on by dish-shaped, concrete, surface drains of varying width, the average being five feet. These drains are provided in low-lying districts, and in 1913, 3,000 linear feet of this type were laid down, but when the land has been properly raised and has settled the former type could be substituted with advantage.



Of the Simpson type, 20,000 linear feet have been constructed since February, 1910, 4,600 being put down last year.

There are altogether  $17\frac{1}{2}$  miles of public drains in Lagos, of which 14 miles are of the old type.

The drainage of Lagos presents an extremely difficult problem on account of the large areas still to be reclaimed, the tortuous streets and narrow lanes in the overcrowded native quarter, and the enormous expense that must be incurred in carrying out a comprehensive town-planning scheme and a complete and satisfactory drainage and sewage disposal system.

The scheme introduced by Mr. Wright, Engineer to the Lagos Municipal Board, and mentioned under Sewage Disposal (*a*) on page 40 of this Report, has so far proved quite satisfactory, but, as already stated, only a very small area has in this way been drained.

It has been estimated that Lagos alone requires 80 miles of public street drains, and at present only  $3\frac{1}{2}$  miles are regarded as satisfying sanitary requirements.

At Warri, Calabar and various other stations masonry drains have been considerably extended during the past year.

#### CLEARANCE OF BUSH, UNDERGROWTH, ETC.

This is a matter which constantly absorbs a large amount of the attention of Medical Officers at most stations, and a great deal of clearing is done by sanitary gangs of prisoners and labourers. The area reported as cleared during each of the last three years, represented in square yards, was as follows :—

		1911.	1912.	1913.
Western Province	...	877,890	2,377,560	2,260,060
Central Province	...	609,900	3,779,660	4,171,200
Eastern Province	...	972,629	7,461,973	4,385,861

The above figures, which show a large falling off in the Eastern Province, do not represent the real area cleared, as much work is done that is never recorded, and only an approximate figure is given for most stations at the end of the year.

#### INFECTIOUS DISEASES HOSPITALS.

The Lagos Infectious Diseases Hospital was completed towards the beginning of the year, and was at first occupied as an Isolation Station for persons kept under observation during the yellow fever outbreak, and later, on the 3rd of November, the patients in the old Infectious Diseases Hospital were transferred there, the place being no longer used for persons from infected areas.

The buildings are well constructed and well ventilated. They are entirely mosquito proof, the gauze being protected inside by  $\frac{1}{2}$ -in. wire netting. There were 5 cases of variola, 67 cases of varicella and 10 cases of measles admitted during the year, nearly half of the varicella occurring in Krooboys. Arrangements have been made to have all Krooboys vaccinated on arrival in Lagos.

Towards the end of the year 1913 a scheme was drawn up for the erection of simple isolation hospitals at the various stations not already provided for in Southern Nigeria, and it is to be hoped that it will mature in 1914. Several of the larger stations, such as Lagos, Warri, Calabar and Sapele, have

permanent buildings, but in most out-stations bush huts of very imperfect construction are made to serve the purpose of more substantial structures.

At Yaba and Asaba, leper asylums have been established and are maintained by Government.

### QUARANTINE STATIONS.

The opening of Lagos Harbour to the largest ships visiting the shores of West Africa has caused some modification of the views expressed in regard to having a single up-to-date Sanitary Station at Forcados, Lagos being now regarded as the terminal port of call for passenger vessels.

At Lagos a completely new Quarantine Station has been established on a site near the old one, and this, with the Infectious Diseases Hospital situated two miles from town, has enabled us to cope with recent demands for isolation.

The station at Calabar is practically useless, and the site is not a good one. Some money must of necessity be spent here to meet the small requirements of the port.

Bonny, which is quite close to Port Harcourt, and has to be passed before the latter is reached, has been provided with a Quarantine Station, and it is contemplated to improve the place so as to make it meet the requirements of the latter port, as well as those of Opobo and Degema.

With well-equipped Sanitary Stations at Lagos and Bonny, and small Quarantine Stations at Forcados and Calabar, the whole demands of the Nigerian Coast could be met, as the distance between ports is only a few hours steaming for large vessels.

### SITES AND BUILDING PLANS.

An endeavour has been made to draw up standard plans of bungalows, prisons, hospitals and other buildings, and undoubtedly this is a more satisfactory method of dealing with the problem of providing suitable structures, at a reasonable cost, to meet the demands of Southern Nigeria, than to have a new plan submitted every time a building is to be erected. This latter system is very unsatisfactory, as each engineer and draughtsman has his own ideas of how things should be done, and very often they clash with sanitary requirements. Many plans of sites and buildings have passed through the office during the year, and whenever necessary they were altered to meet our wishes.

### SANITARY INSPECTORS-IN-TRAINING.

A scheme for the training of Sanitary Inspectors was submitted and approved, but candidates, though plentiful, had not been selected at the end of the year. It is more than probable that the work of teaching will be begun, with the first ten candidates selected, during 1914.

The opinion is held that the largely increased salaries which will be offered will be a great attraction to good and well-educated men.

### PRISONS.

The Prison Returns for 1913 show some improvement in the health of the prisoners. In many prisons the death rate is high, but this is accounted for by the weak condition of many of the prisoners before they are incarcerated, and the unvarying habit of this class of native to resist treatment, if possible, and yield to what he regards as "fate." The table attached shows that there



is not always the same relationship between the death rate on the one hand and bad ventilation or overcrowding on the other, but taking all things into consideration it is clear that with commodious, well ventilated, well built cells, good food and water and ample clothing, the health of prisoners must markedly improve. These things are receiving the earnest attention of the authorities, and many defects discovered during the year have been speedily remedied.

Great care is taken to have all water in use in the prison thoroughly boiled and the food well cooked, but when prisoners are working outside it is impossible to watch them so closely as to keep them from drinking or eating any water or food they come across, even though they take their own water supply with them.

### SLAUGHTER HOUSES.

The total number of slaughter houses shows an increase of one over last year. So far as Europeans are concerned they either obtain their animal food from ships or cold stores or have it slaughtered for their own use.

Where slaughter houses are provided, all animals sold for the food of man are supposed to be slaughtered there ; but for marriages, feasts, etc., special permission may be given by the Health Officer to have animals slaughtered outside the abattoir.

Under the new system of training Sanitary Inspectors the whole subject of slaughtering animals, meat inspection and transport of meat to markets will be taught, and undoubtedly it will be found necessary later to modify many of the methods at present in use.

### MARKETS.

It is the intention of the Government to have one public market for Lagos, and the idea is perfectly sound, but a large area requires to be reclaimed before anything can be done in this direction, and that area has been defined. The number of markets has increased during the year, but the majority are simply open spaces. Few places, except Lagos and Ejirin, have decently constructed stalls.

### CEMETERIES.

Slowly but surely we are making progress in the direction of the provision of cemeteries, but it requires a great deal of tact and persuasion on the part of the authorities interested, to get people who are in the habit of burying their dead in their own compounds to abandon that practice and dispose of the bodies in a common grave yard.

Burial customs vary so widely in different places that it will be a long time before the prejudices of the people, in many parts of the country, against burial in a public grave yard are overcome.

### BUILDING REGULATIONS.

Lagos and Ebute Metta have benefited greatly by the Building Regulations which came into operation in November, 1913, and which have caused a distinct improvement in the type of houses erected. The total plans approved from November, 1911, to December, 1913, amounted to 1,031.

The total plans approved in 1913 were 578.

The buildings in course of erection in 1913 were as follows :—

(a)	Brick or concrete houses, churches, etc.	...	...	156
(b)	Huts of mud, bamboo, etc.	...	...	456
(c)	Shops, stores, and other structures	...	...	110
Total				<u>722</u>

There were 14,573 inspections of new buildings. The regulations were contravened in 157 cases, and there were 4 prosecutions.

A few simple building rules were introduced early in the year for Calabar, but good results, as yet, are barely perceptible.

### SEGREGATION.

Soon after the arrival of the Governor-General in Southern Nigeria His Excellency directed his attention to the solution of the segregation problem. In few places can it be said there is anything approaching segregation in existence, and to carry it out in towns which have existed for years, where people have been allowed to build without let or hindrance, is not an easy task, and the problem is rendered more difficult by the fact that land, in some places, has assumed a high value, and enormous sums would require to be spent to carry out, expeditiously, any very pretentious schemes.

The view held, and it seems a thoroughly sound one, is—where Europeans or natives cannot be transferred to new sites outside existing towns—to have a European Reservation delimited, and a native-free zone of a quarter of a mile in extent all round marked out on a town plan. This native-free zone may be inhabited at present by Europeans or natives, but gradually, as their leases run out, they will be permitted to obtain new leases of land in the specific areas to which they belong, and eventually the free zone will become uninhabited, although offices, stores, etc., may be retained thereon.

So far as trading is concerned, Europeans and natives would be given, as nearly as possible, equal facilities, so that no hardship would be caused to either of them.

### LAGOS.

More progress in sanitation has been made in Lagos than in any other town in Southern Nigeria, but this is to be expected, as it is the largest and most important port on the Coast.

I have already dealt with drainage, refuse disposal, night-soil disposal and various other matters, and will now confine myself to a few remaining interesting points.

At the end of 1913, there were in Lagos 70 miles of roads and streets, four miles of which were macadamised and 25 miles were provided with a thick layer of laterite on a brick foundation. The remainder of the roads presented, simply, the natural surface of the ground.

Unless roads over which heavy motor traffic passes are properly macadamised, it is impossible to keep them, and large sums of money have to be spent on repairs. A new method of macadamising was adopted by the Municipal Engineer, and promises to be better and cheaper than the old one, as a much firmer surface is obtained than formerly.

Lagos is overcrowded, and has so many narrow winding streets which, for want of drainage, are in places greatly cut up, that the only way to deal



with this condition is to form a definite plan and cut wide streets through those areas, the work being carried out very gradually.

There is so much low-lying land, only a few inches above ground water level in the rainy season, and indeed oftentimes flooded then, that reclamation never really seems to be complete; yet the improvements carried out in the past few years have proved very beneficial to the town.

The swamps are being gradually reclaimed, but the amount of material still to be deposited before proper drainage of the newly-formed areas can be carried out is enormous.

The total sum expended by the Municipal Board of Health in the Lagos Sanitary District amounted to £22,635 11s. 3d. in 1913.

### CALABAR.

At Calabar several improvements of a permanent character have been carried out, and £1,572 1s. 3d. has been spent on drainage, reclamation, conservancy of latrines and disposal of refuse.

To adequately carry on sanitary work at Calabar requires more European supervision than has heretofore been provided, consequently less progress is made than should be the case in this important port.

During the Senior Sanitary Officer's last visit of inspection many improvements suggested themselves, and though it is not possible to have all carried out in one year, the more urgent matters are receiving careful attention.

### FORCADOS AND BURUTU.

At Forcados and Burutu £4,140 10s. was spent in reclamation and drainage alone.

The importance of these ports, which are almost together at the mouth of the Niger, has hitherto loomed large in the eyes of all Nigerians, but since the opening of Lagos Harbour to large ships their significance has waned; yet like all other ports they must be maintained in good sanitary condition, and it is encouraging to know that money has been spent on much needed improvements.

### BONNY AND PORT HARCOURT.

Previous to 1913 Bonny did not receive a great deal of attention, though its sanitary condition was reported from time to time; but last year, owing to Port Harcourt assuming great importance and being in close proximity to the former town, more consideration has been given to Bonny, and the necessity for improving its sanitary condition has been recognised.

The sanitation of Port Harcourt is being well provided for, and it is hoped that this new and important port will be effectually protected against any of the scourges that visit the African Coast.

### RAILWAY SANITATION.

During 1913, rules to be observed with regard to the sanitation of all stations on the railway were drawn up, and as each station is provided with a sanitary labourer and the railway is divided up into sections, each section being supervised by a travelling Sanitary Inspector, much improvement has resulted.

Report books have been provided for all stations, and are kept in the office of the Station-master. The Inspector after visiting a station, which he does once or twice a week, is required to write in the book the results of his inspection, so that the Medical Officer of the District or any Visiting Officer may see at a glance what progress is being made.

As a result of the lack of cleanliness exhibited by many native employees of European firms which have branches on railway land at many stations, sanitary clauses have been inserted in the new leases granted by the Railway, giving much more control over these people than was previously the case.

Many latrines, wash-places, kitchens and quarters having been erected or improved, the sanitary condition of the railway stations is much better than formerly.

At Aro, where potable water is difficult to obtain and there is a fairly large European community, whose tank supply often gives out before the rains begin, two condensers have been set up, and provide sufficient water to supply the needs of those living at Aro and passing through that station.

Railway carriages on the boat express are mosquito-proof, and every comfort is provided for the passengers by that train.

#### IV.—MEASURES TAKEN TO SPREAD A KNOWLEDGE OF HYGIENE AND SANITATION.

##### (a.)—LECTURES.

As in previous years, instruction by simple lectures and talks to the people has been carried on, and Medical and Sanitary Officers have been greatly aided in this by the sympathetic attitude adopted by Executive Officers, whose influence for good with the Chiefs and people is almost unbounded.

##### (b.)—SCHOOL TEACHING.

Sanitation is taught in the schools, and examinations are held and prizes given. Considerable progress has in this way been made in some of the more important towns, and practical proof is often given of such teaching bearing fruit.

##### (c.)—EXAMPLE.

A not unimportant part in convincing the people of the value of sanitation and hygiene is the practical example set by Europeans and some educated and intelligent natives, and the keen interest taken by them in the introduction and progress of sanitary measures.

#### V.—RECOMMENDATIONS FOR FUTURE WORK.

The following are the more important matters to be undertaken at present :—

(a) *Reclamation*.—Constant and complete reclamation of low-lying areas and swamps in the vicinity of all ports and important towns.

(b) *Borrow-Pits*.—Drainage or filling in of all borrow-pits near the railway line or roads.

(c) *Subsoil Drainage*.—The subsoil drainage of low-lying compounds and areas.



(*d*) *Sewage Disposal and Drainage*.—The introduction of a complete and effective sewage disposal and drainage system for Lagos, such as that recommended by Mr. Peet, Director of Public Works, and the construction of land and water latrines where required at other stations.

(*e*) *Incinerators*.—The erection of permanent incinerators at all important stations.

(*f*) *Sanitary Stations*.—The construction of completely equipped sanitary stations at Lagos and Bonny.

(*g*) *Markets*—

(1) The provision of a large general market for all important stations, sheds being built having concrete floors and corrugated iron walls and roofs.

(2) The erection of separate meat markets where necessary.

(*h*) The application of the Towns, Public Health and Destruction of Mosquitoes Ordinances to the whole of Southern Nigeria.

(*i*) The complete protection of water supplies.

(*j*) The clearing of the banks of streams and rivers near inhabited areas.

(*k*) The adoption of standard plans for bush prisons, and the construction of prisons according to the plans.

(*l*) The appointment of three more European Sanitary Inspectors, the type of men selected being younger than those presently employed, and not having been placed on the Army retired list.

(*m*) The complete and thorough enforcement of the scheme for the training and payment of Sanitary Inspectors.

Before bringing this Report to an end, I have to thank (*a*) the Senior Sanitary Officer for placing at my disposal much material collected before he went on leave to England, (*b*) Dr. Craig for the great help he has been to me in the preparation of charts and tables, and (*c*) the many Medical Officers and all others who have so kindly and willingly given their aid during the outbreak of yellow fever and at other times.

The following tables, maps and charts are attached to this Report :—

I. Summary of routine sanitary work from the various stations in Southern Nigeria.

II. Anti-Mosquito Returns :—

In this return the number of houses and compounds given represents the total number of inspections made in the year, *e.g.*, in Lagos each house or compound is inspected 52 times, at least, each year. The daily inspection and indices for each District are recorded in the office, but too much space would be occupied in giving these.

III. Malaria and Blackwater Fever cases.

IV. Cases of Infectious Disease.

V. Cases of Helminthic Disease.

## VI. Prison Returns.

Here, the "average site area per prisoner" means the average site area of the whole compound, and "average floor cell area" does not include passages, &c. In many cases this latter area is small, but in several prisons large "chop rooms" are provided, and there are various other rooms which are in times of stress used as cells, but we do not advocate their use as such.

## VII. Splenic Returns.

## VIII. Vital Statistics Returns.

## IX. Meteorological Tables.

## X. Four Charts showing :—

1. Rainfall and Mosquito Index in Lagos.
2. Yellow Fever in relation to rainfall and Mosquito Index.
3. Malarial and Blackwater Fever cases in Europeans in Lagos Hospital in relation to rainfall.
4. Vital Statistics Chart.

XI. Yellow Fever Map of Lagos enclosed after page 25.  
(Cases on ships and outside the Island are not shewn.)

## XII. Four maps of Lagos shewing :—

- (a) Latrines, Dustbins, Incinerators, Nightsoil Depôts and Nightsoil area in which odour-proof pails are used.
- (b) Draining areas, drained or proposed to be drained by the earthenware invert, set in concrete (Simpson type).
- (c) Swamp area, and the area in which houses with thatched roofs are prohibited.
- (d) The areas into which Lagos is divided for daily inspections and carrying out Anti-Mosquito Work.

## EXPLANATION OF CHARTS.

Chart No. 1 shews the rainfall and mosquito index in Lagos for each month, beginning with April, 1911, when the Sanitary Office was opened, and ending on December, 1913.

The rainfall begins to rise in March and reaches its limit in June, after which month it gradually falls, rising slightly in September and October, until in December it is practically nil.

The gradual and progressive fall in the mosquito index from 17 per cent. in July, 1911, to 2 per cent. in December, 1913, is well illustrated.

The Index is seen to rise after the rainfall increases and to fall as the rainfall diminishes.

Chart No. 2 illustrates the monthly incidence of cases of yellow fever in Lagos during 1913 in relation to rainfall and mosquito index.

The rise in rainfall from March to June with the consequent rise in the mosquito index is clearly shown.



Yellow fever cases began to appear in May and reached their maximum in July, a month after the rainfall and mosquito index had attained their highest figures for the year.

Chart No. 3 was constructed to shew the relationship between the rainfall in Lagos and the European cases of malarial and blackwater fever, admitted into Lagos Hospital during the five years 1909 to 1913.

The rise in the number of cases of malarial fever in the "Rainy Season" is marked. The chart also shows an increase in the number of cases treated in hospital, many of whom in previous years would have been allowed to remain in their homes.

The number of blackwater fever cases admitted each month is too small to show any relation to malarial fever, but the composite chart for the five years, in which the rainfall is not given, represents a rise in blackwater fever cases after the malarial fever cases have reached their maximum.

Chart No. 4 illustrates the figures recorded in the Registrar's office, and although many diseases may have been incorrectly diagnosed, the actual number of deaths shewn is accurate. The number of births recorded is, for various reasons, probably slightly under the real figure for Lagos..

The principal causes of death are the same as those given by the Registrar General for England in his Annual Report for 1911, together with some of the more common Tropical Diseases.

The populations shewn in the Statistics Table, attached, form the basis of our calculations. The columns illustrating the birth and death rates shew on the whole a gradual fall since 1909. The death rate is still high, but a large proportion of it is due to the heavy infantile mortality. The total number of births registered each year since 1910 shews little variation, yet the columns represent a fall in the birth rate. This apparent fall is no doubt due to an increase in the population, adult males preponderating over females, the former being attracted to Lagos in order to get work.

The fall in the death rate is satisfactory evidence of improvement in the health conditions of Lagos due to sanitary progress, and this is especially marked in the columns showing infantile mortality, which shew a gradual fall since 1910, but the figure is still high, and much remains to be done to reduce it further.

The causes of the high infantile mortality are the same as those found elsewhere, together with a prejudice on the part of native mothers against artificial feeding, and a liking for dosing the infants with various harmful concoctions which are forced into the stomach by hydraulic pressure. The gradual educating of mothers in the care of their infants and the introduction of artificial feeding would go far to reduce the present high mortality.

The columns illustrating deaths from the principal causes shew the great improvement made in the classification of diseases. In 1909 deaths were registered chiefly under the four headings shewn, but during 1911, 1912 and 1913, after the new nomenclature came into use, much improvement has been made and fewer deaths now appear under "other causes."

It will be noted that malaria as a cause of death has fallen from 8·7 per 1,000 in 1909 to 2·56 per 1,000 in 1913.

Many deaths due to pulmonary diseases are recorded each year ; diarrhoea, enteritis and dysentery are also responsible for a large number of deaths. It is hoped, however, that after the introduction of a pipe-born water supply to Lagos many of these diseases will disappear or show a marked diminution.

R. LAURIE,

*Acting Senior Sanitary Officer.*

## IV.—HOSPITALS AND DISPENSARIES.

At the various hospitals and dispensaries 89,854 natives and 2,961 Europeans were treated as against 32,882 in 1912, 24,311 in 1911 and 26,054 in 1910.

The prevailing diseases were :—

Malaria	...	...	...	...	6,995
Chicken-pox	...	...	...	...	1,065
Venereal disease	...	...	...	...	2,284
Anæmia	...	...	...	...	669
Neuralgia	...	...	...	...	1,399
Conjunctivitis	...	...	...	...	2,165
Valvular disease	...	...	...	...	400
Bronchitis	...	...	...	...	6,233
Diseases of digestive system	...	...	...	...	17,131
Adenitis	...	...	...	...	1,349
Arthritis	...	...	...	...	6,183
Abscess	...	...	...	...	1,832
Ulcers	...	...	...	...	8,515
Injuries	...	...	...	...	14,443
Ascaris	...	...	...	...	1,913
Guinea-worm	...	...	...	...	590

New mud hospitals were built at Abakaliki and Obudu, and at Ikotobo in the Eket District a Sleeping Sickness camp was established.

### LUNATIC ASYLUMS.

*Yaba Asylum.*—Fifty-five inmates were treated ; fifteen new patients were admitted during the year ; four were discharged ; one escaped and was not recaptured and there were three deaths.

*Calabar Asylum.*—Five new cases were admitted during the year, with four deaths and two discharges.

### REPORT BY GOVERNMENT DENTAL SURGEON.

THE HOSPITAL,  
LAGOS.

*August 5th, 1913.*

SIR,

I have pleasure in submitting to you my first report upon the dental work done in Southern Nigeria from February 7th to August 2nd, 1913.

(2) I arrived in Lagos on February 7th, and during my stay in the Colony my time, both here and at Calabar, has been fully occupied. Many of the European officials paid several visits, and the work done has evidently been appreciated. I am glad to be able to report that in a few of the mouths examined the teeth were in excellent order, and showed unmistakable signs of regular and careful treatment. On the other hand, many of the mouths showed more or less neglect, while some were in an appallingly diseased condition. I should like to point out also that there are still a few officials who in spite of the advice of the home medical officer come out without having had their teeth attended to. It cannot, I think, be too strongly emphasized that by so doing they take very grave risks, for though they may escape actual



toothache it is obvious that the constant poisoning of the system from diseased teeth, even though it does not lead to actual ill-health (as is frequently the case), will prove a very serious tax upon the vital forces of the body.

(3) With regard to native officials, their teeth are not so good as is commonly supposed, and the custom of filing the teeth among many of the native races plays an important part in the production of dental caries. Of one hundred adult prisoners from various places and representing different races examined at Lagos, 22 had perfect teeth with no trace of caries, 41 had only one or two teeth affected, 21 had less than six teeth affected, while of the remaining sixteen 12 had less than ten teeth decayed and in the other four the teeth were all more or less hopelessly affected with pyorrhœa. The practice of filing the teeth cannot be too strongly condemned, and is, I believe, a predisposing cause in the production of pyorrhœa alveolaris, from which so many suffer.

(4) With regard to extraordinary operations, I should like to point out that the very limited time at my disposal and the fact that I had no mechanical assistance were very heavy handicaps and prevented me from treating a great many who sought my services, so that I was forced to deal with only a very limited number of the more urgent cases. The dental treatment, so far as it has been possible to carry it out under the present disadvantageous conditions, has been most successful, but it is patent that the present scheme is inadequate and will require to be augmented in the immediate future.

(5) It would greatly assist me in future visits, if officials requiring treatment would make a point of calling as early as possible after my arrival, in order that I may be better able to gauge the nature and amount of work requiring to be done.

I have, etc.,

H. F. HARDIE.

THE HONOURABLE,  
THE PRINCIPAL MEDICAL OFFICER,  
Lagos.

## DENTAL WORK DONE IN LAGOS FROM FEBRUARY 12TH TO APRIL 29TH, AND JUNE 14TH TO AUGUST 2ND, 1913.

### OFFICIALS TREATED FREE AT GOVERNMENT EXPENSE.

Europeans.	Nature of Work.	Natives.	Nature of Work.
72	Fillings ... .. 70 Extractions ... .. 28 Other operations, scaling, dressing, replacing crowns, etc. ... .. 63	101	Fillings ... .. 51 Extractions ... .. 134 Other operations, scaling, dressing, replacing crowns, etc. ... .. 46

### EXTRAORDINARY OPERATIONS.

Europeans.	Nature of Work.	Natives.	Nature of Work.
11	Repairs to artificial dentures, crowns, and bridge work. Fees paid £10 1s.	10	Artificial dentures, crowns, and repairs thereto. Fees paid £30 12s.

# DENTAL WORK DONE IN CALABAR FROM MAY 6TH TO JUNE 6TH, 1913.

## OFFICIALS TREATED FREE AT GOVERNMENT EXPENSE.

Europeans.	Nature of Work.	Natives.	Nature of Work.
12	Fillings ... .. 13 Extractions ... .. 3 Other operations, scaling, dressing, replacing crowns, etc. .. .. 15	30	Fillings ... .. 32 Extractions ... .. 27 Other operations, scaling, dressing, replacing crowns, etc. ... .. 22

## EXTRAORDINARY OPERATIONS (CALABAR).

Europeans.	Nature of Work.	Natives.	Nature of Work.
Nil	—	4	Gold fillings and artificial dentures. Fees paid, £6 6s.

# TOTAL WORK DONE IN S. NIGERIA (CALABAR AND LAGOS).

## OFFICIALS TREATED FREE AT GOVERNMENT EXPENSE.

Europeans.	Nature of Work.	Natives.	Nature of Work.
84	Fillings ... .. 83 Extractions ... .. 31 Other operations, scaling, dressing, replacing crown, &c. ... .. 78	131	Fillings ... .. 83 Extractions ... .. 161 Other operations, scaling, dressing, replacing crown, &c. ... .. 68

## EXTRAORDINARY OPERATIONS.

Europeans.	Nature of Work.	Natives.	Nature of Work.
11	Repairs to artificial dentures, crown, and bridge work. Fees paid, £10 1s.	14	Gold fillings, crowns, artificial dentures, and repairs thereto. Fees paid, £36 18s.



## VI.—SCIENTIFIC.

Some interesting work was done by Dr. Scott Macfie on Trypanosomiasis in the Eket District, but only just sufficient to indicate that most important work remains to be done. Dr. Scott Macfie has also reported on the occurrence of Babesiasis in domestic animals (see page No. 56).

Dr. Wilson has recorded two cases of Porocephalus occurring in man at Degema (see page No. 71). Dr. Currie has also found Porocephalus in a patient post-mortem. Until very recently Porocephalus has been regarded as a parasite of animals exclusively. The record of these three cases is therefore of considerable interest.

A case of sarcoma of the foot was recorded by Dr. Currie. On section, and reference to the Medical Research Institute at Yaba, the tumour proved to be of the spindle-celled variety.

Dr. Currie also reported on a collection of Coleoptera which he made and sent to the Director of the Imperial Bureau of Entomology for identification (see page 77).

Reports on four cases of Pappataci Fever occurring in Europeans are furnished by Dr. W. S. Clark (see page 74).

A Report on Yellow Fever by Dr. Leonard will appear in the volume of Investigators' reports which is being published by the Yellow Fever (West Africa) Commission.

The following papers were published :—

### MACFIE.—

“On the morphology of the Trypanosome (*T. nigeriense*, n.sp.) from a case of Sleeping Sickness from Eket, Southern Nigeria.” *Annals Tropical Medicine and Parasitology*, Vol. VII., No. 3A.

“On the Pathogenicity of the Trypanosome (*T. nigeriense*) from a case of Sleeping Sickness from Eket, Southern Nigeria.” *Annals of Tropical Medicine and Parasitology*, Vol. VIII., No. 1.

“Preliminary Note on the Development of a Human Trypanosome in the Gut of *Stomoxys nigra*.” *Annals Tropical Medicine and Parasitology*, Vol. VII., No. 3B.

“A Note on the Action of Common Salt on the Larvæ of *Stegomyia fasciata*,” *Bull. Ent. Research*, Vol. IV.

### JOHNSTON.—

“Observations on Variations in form of Microfilariae found in Man.” *Annals Tropical Medicine and Parasitology*, Vol. VIII., No. 1.

“A Note on Helminthiasis in Bassa Province, Northern Nigeria.” *Lancet*, 27 Sept., 1913.

### MACFIE AND JOHNSTON.—

“Experiments and Observations on Yellow Fever.” Read before the Royal Society of Medicine, and published in the Proceedings of that Society, Vol. VII., 1914 (Medical Section), pp. 49–67. Also published in the *Bull. Y. F. Bureau*, Vol., III No. 2.

“A Note on Five Cases of Porocephalus in Man, from Southern Nigeria.” *Lancet*, 15th Nov. 1913.

“A Note on the Occurrence of Spirochaetosis of Fowls in Southern Nigeria.” *Annals Tropical Medicine and Parasitology*, Vol. VIII., No. 1.

“Observations on the Action on Trypanosomes of Certain Drugs, and of *Staphylococcus pyogenes*.” *Journal London School of Tropical Medicine*, Vol. II., Part III.

“Auto-erythrophagocytosis as an Aid to the Diagnosis of Trypanosomiasis.” *Journal London School of Tropical Medicine*, Vol. II., Part III.

“A case of Equine Trypanosomiasis, Characterized by the Occurrence of Posterior Nucleated Forms.” *Journal Tropical Medicine and Hygiene*, Vol. XVI., No. 22.

SLEEPING SICKNESS IN THE EKET DISTRICT OF NIGERIA, BY DR. J. W. SCOTT MACFIE.

During the months of November and December, 1913, I undertook, with Dr. Gallagher, the Medical Officer in charge of the isolation camp at Ikotobo, a study of sleeping sickness as it appears in the Eket District of Nigeria. A full account of our investigations will appear later, but for the present the following notes will indicate the more important features of the disease.

Sleeping sickness has undoubtedly existed in the Eket District for a great number of years. The natives are unanimous in stating that it has been familiar to them all their lives; but some of them assert that during recent years its incidence has increased owing to the neglect by the present generation of the traditional laws and customs relating to the behaviour of infected persons. Whether this is in fact the case cannot be determined with certainty, but that these laws exist is in itself a proof of the antiquity of the disease. Tradition, moreover, affirms that there was a time, long ago, when the disease was a much more serious scourge than it is at present, when whole villages were exterminated by it.

During the sixteen months in which sleeping sickness has been under investigation, 222 cases have been identified in which the trypanosomes have been demonstrated. In addition 114 cases have been met with presenting some of the clinical features of the disease, but in which the parasites have not actually been found. There can be little doubt that the majority of these were cases of trypanosomiasis. In what follows no account has, however, been taken of them, only those cases being considered in which the clinical diagnosis has been confirmed by the aid of the microscope.

Cases have been detected in every part of the district, but a glance at the accompanying map, on which the towns in which sleeping sickness has occurred are specially marked, will show that the disease is most prevalent in the neighbourhood of Ikotobo, and in the areas drained by the Obium River. Beyond the bounds of Eket the occurrence of sleeping sickness has not been investigated. There can be little doubt, however, that the disease will be found to overlap to some extent at any rate the neighbouring districts.

*The influence of Sex and Age.—Sex.*—In the Congo and Nyasaland many more males than females are said to be infected with trypanosomiasis, and the same seems to apply to the Eket District of Nigeria. Of the 222 cases in which the diagnosis has been confirmed, 140 (or 63 per cent.) were males and 82 (or 37 per cent.) females. The number of men and women were approximately equal (24·3 per cent. and 19·4 per cent. respectively), but many more boys (38·7 per cent.) than girls (17·6 per cent.) were infected.

*Age.*—On comparing the statistics for Eket with those for the Congo and the Gambia there is seen to be one outstanding feature, namely, the very large percentage of the cases that occurred in children. Over 56 per cent. of



the cases in Eket were in children. The corresponding figure for the Gambia is 24 per cent., and for the Congo 9·3 per cent. or 8·1 per cent. according as the population from which the cases were drawn was a selected or an unselected one.

Since natives of all ages and both sexes are accustomed to frequent the camp at Ikotobo, there is no reason to suppose that an unusually large number of children has been brought under observation. It might even have been expected that relatively few would have been brought for treatment, either from a natural distrust of strangers and foreigners, or because their number was actually small owing to the impotence that is an early symptom of the disease in adults.

Why then should the children be especially affected? One possible explanation may be the fact that they are the water carriers and the collectors of fire-wood, and being mostly unclad, are thus exposed to the attacks of tsetse flies at the water-side and in the bush. Even infants are not completely protected from the chance of infection since, slung on their mothers' backs, they are carried out into the cultivated land where *G. tachinoides* is frequently found. But it should be remembered that all the people, irrespective of sex or age, are exposed to the attacks of tsetse flies, and especially to those of *G. tachinoides*, the species which is not only the most common, but also the frequenter of the bush and the farms.

Although the majority of the cases were children, the range of age of the patients was considerable. On December the 31st, the youngest inmate of the camp was 2½ years of age, and the oldest 50. A closer analysis of the ages shows that 67·1 per cent. of the cases occurred between the ages of 2 and 15, and that 85·1 per cent. were in persons under 21.

*Diagnosis.*—Diagnosis has presented unusual difficulties. The majority of the cases have shown very slight symptoms, and would have been unrecognisable clinically. As a rule there was some degree of glandular enlargement, but as many of the children in the native towns have dirty heads, and as in a tropical country there are many causes which may produce this condition, it was impossible to base a diagnosis on this single sign. It is probable that the parents of the patients often observed other symptoms that would not be apparent to strangers. Their diagnosis was indeed seldom at fault. For this reason a confirmation of the diagnosis by the finding of the trypanosomes was a matter of importance. In practice, however, the parasites were extremely difficult to detect, and in all the cases that came under our notice were rare.

The methods of diagnosis employed were the examination of thick and thin blood films, and of gland juice obtained either by puncture or excision of an enlarged cervical gland.

*Blood Examination.*—The percentage of cases of sleeping sickness in which trypanosomes can be found by an examination of the blood has been variously stated as from 45 per cent. to 2 per cent. In the Eket District no case has yet been seen in which trypanosomes could be found by the examination of a drop of the peripheral blood. Cases have been examined at all stages of the disease, and at different hours of the day, but always with negative results. Not only has this been our experience, but it was also that of Dr. Gray, who first identified the disease, and of Dr. Foran who spent a year in the district and collected a large number of cases.

Although blood examination for trypanosomes has been unavailing, the occurrence of auto-agglutination of the red corpuscles has been of some assistance in diagnosis. Our observations were perforce made on cover-slip preparations, a method of demonstrating the sign which is apparently fallacious, but it may be of some interest to note that in practically every case examined in this way auto-agglutination was well marked.



*Gland Examination.*—There can be little doubt that in any case in which there was sufficient enlargement, the cervical glands would be explored by most observers before attempting any other method of diagnosis. In endemic areas, in which the parasites are difficult to detect in the blood, this method of examination is indeed the only convenient one to adopt.

All the cases diagnosed at Ikotobo were examined in this way. In our experience trypanosomes were always rare in the gland juice, and it was often necessary to puncture several different glands before finding the parasites.

In many cases that for other reasons were considered highly suspicious of sleeping sickness, gland puncture failed to reveal the presence of trypanosomes. In such cases excision of a cervical gland was resorted to.

Not infrequently, however, examination of the glands, no matter by what means, failed to reveal trypanosomes. Over a hundred cases of this sort have been met with. Clinically they suggested sleeping sickness, and the natives believed that they were suffering from this disease. In some of them fibrosis of the glands may have accounted for the absence of the parasites. One of the cases died with the symptoms of trypanosomiasis.

*Gland Palpation.*—It was not possible, in the limited time at our disposal, to make a systematic examination throughout the district for enlarged cervical glands, but the inhabitants of two selected villages were examined. The first, Ikot Offiong, was chosen because it was one of the places in which sleeping sickness was originally observed, and was typical of a village in which the disease was prevalent. The second, Mpok, was chosen to represent the villages in which the disease is rare.

At Ikot Offiong 137 people were examined, 53 males and 84 females, the majority of whom were children. Much enlarged glands were present in 27·6 per cent. of the boys, and in 17·5 per cent. of the girls, and slightly enlarged glands in 48·3 per cent. and 52·5 per cent. respectively. At Mpok altogether 825 persons were examined, 313 males and 502 females, and of these 297 were children. Glandular enlargements of considerable degrees were much less common than at Ikot Offiong, and the children especially appeared to be more healthy. This fact, taken in conjunction with the prevalence of trypanosomiasis at Ikot Offiong and its rarity at Mpok, suggests that in Eket, just as in the Congo and the Gambia, there is a definite connection between the occurrence of this disease and a high percentage of enlarged cervical glands.

If enlarged cervical glands have a similar significance in Eket to that claimed for them in the Congo and the Gambia, and there seems little reason to suppose they have not, the incidence of trypanosomiasis must be great indeed, for within the bounds of a district of less than 700 square miles many thousands of cases must be congregated.

*Symptoms.*—In Nigeria sleeping sickness occurs in a mild form, apparently most similar to that in the Gambia. The disease in Eket, however, presents certain peculiarities which are difficult to explain adequately on the assumption that it is identical with the disease occurring in other parts of Africa.

The death rate seems to be very low. Of the 222 cases identified up to the end of 1913, nine had died, giving a mortality of 4 per cent. for this period. It is unlikely that this is a low estimate. The disease occurs especially amongst children, and if many of them died of it, one would expect to find a scarcity of adults, which is not the case. Eket is indeed one of the more densely populated districts of Nigeria.

The fact that the malady is of so mild a type does not necessarily minimise the gravity of the situation. Without further investigation it is not



possible to forecast the results of its spread into neighbouring districts, where it might reassume the virulent form which, according to native tradition, it once had.

The symptoms exhibited by the patients were often of the slightest. A visitor to the isolation camp at Ikotobo, seeing the troops of children at play, or dancing on moonlight nights, would be struck by nothing so much as by the apparent good health, high spirits and happiness of the inmates. Many of the patients indeed showed no symptoms of illness. Such symptoms as did occur were those common to trypanosomiasis all over Africa. It will therefore be unnecessary to describe them in detail, but the following brief notes will suffice to indicate the clinical aspect of the cases.

With but few exceptions the physical condition of the patients was good. In a minority some degree of emaciation was present, but in only one or two was it at all marked. In a majority of the patients on the other hand the facial expression was somewhat dull. This feature was in part due to œdema of the face, and especially of the eyelids, which was a common sign. A few of the adults presented the typical dull heavy facies associated with sleeping sickness. Prominence of the eyeballs was noted in three or four cases.

Some degree of fever was invariably present, the highest point being reached in the afternoon, and the morning temperature being normal or sub-normal. The fever was irregular in degree, but was seldom very high. In very few cases was any sign of periodicity observed, but as most of the children were also infected with malaria, any such regular variation would probably have been masked.

Disturbances of the alimentary system were almost entirely absent. The tongue was generally furred, but the appetite was unimpaired, and digestion appeared to be excellent. The liver was slightly enlarged in about 10 per cent. of the cases. Spasm of the pharynx was observed in one boy. The condition was suggestive of rabies.

Enlargement of the lymphatic glands was present in practically every case, and was not infrequently the only sign. The natives themselves attached the greatest importance to this sign, and believed that by the complete excision of the glands the disease might be cured. As a rule the condition was that of a polyadenitis. The glands in the parotid region were frequently involved, giving the patients a peculiar expression not unlike that associated with mumps. As a rule the glands were painless, but in some cases shooting pains were said to be felt in the head and neck at certain periods.

The spleen was almost always enlarged, a fact no doubt accounted for by the prevalence of malaria. Anæmia was also a common symptom, but was moderate in degree.

The pulse was rapid, small, and of low tension. Neither the respiratory system nor the urinary system appeared to be specifically affected.

Skin affections were generally present, and were of several types. Impetigo of the scalp was perhaps the commonest, but at the stage at which the patients came under observation was generally quiescent. The next most frequent condition was a papulo-pustular eruption distributed all over the trunk and limbs, but often most pronounced on the hands and knees. A scaly and very itchy erythema was also frequently seen, and a circinate urticaria was not uncommon.

Sexual symptoms, impotence and amenorrhœa, which are stated to be early manifestations, were met with in a few of the adult cases. It is doubtful if impotence can be a common or pronounced symptom, for in every village visited children abounded.



Affections of the bones and joints were seldom observed, and those that were seen were probably rheumatic in origin. Rigidity of the flexor muscles of the arm was present in one case. Cramps were never complained of.

Headache and neuralgic pains were most commonly present. Serious involvement of the nervous system was, however, exceptional. Somnolence occurred in less than 10 per cent. of the cases, and in very few indeed was there the tendency to fall asleep at inappropriate times. A lesser degree, characterised by listlessness and apathy, was more common. Speech was slow and deliberate in some of the patients who exhibited a tendency to somnolence. In one or two the gait was shuffling and uncertain. In one case a slight degree of facial paresis was present.

A fine tremor of the tongue was common. Coarse tremors of the limbs and tongue occurred in advanced cases. The deep reflexes were usually somewhat active. Romberg's symptom was sometimes noted. Deep hyper-æsthesia was also observed occasionally. In one case epileptiform fits occurred.

In the majority of cases intelligence appeared to be unimpaired, and several of the children were even so unusually acute as to be precocious.

*Treatment.*—The routine treatment adopted at the camp has been a weekly intramuscular injection of 6 grs. of atoxyl. The patients appear to tolerate this dose, and up to the present no ill results have followed.

It would be difficult to judge of the action of any drug on a trypanosomiasis of the type found in Eket, for not only are the parasites undiscoverable in the blood, and very rare in the gland juice, but also spontaneous cures frequently take place. As yet it is too early to give any definite opinion on the effects of atoxyl treatment at Ikotobo. In a few cases admitted in a greatly debilitated condition the beneficial action has been striking, and the majority appear to have improved under treatment. For the reasons given above it is impossible to determine to what extent the beneficial action of atoxyl has been due to its effects on the trypanosomes, and to what extent to its tonic properties.

Intercurrent infections, as for instance, malaria have, of course, been treated also. The general improvement in health attained in this manner may account in part for the good results observed.

*The Pathogenic Agent.*—In a former paper I described the morphology of the trypanosome as it appeared in the blood of a guinea-pig that had been infected by inoculation with cerebro-spinal fluid from one of the cases under observation at Ikotobo, and as it presented certain peculiarities, proposed for it the name *T. nigeriense*. The virulence of the parasite has also been found to be extremely low in the smaller laboratory animals, a fact which has been considered to support the contention that it is not identical with *T. gambiense*.

During the present investigations, further evidence has been sought on the nature of the pathogenic agent. As the result of a number of experiments, one guinea-pig was infected by inoculation with gland juice from a patient. The parasites were at first extremely rare, and measured on the average only 17·54 per cent. In the course of a day or two, however, they became more numerous, although still far from common, and both longer and shorter forms were found. Some of the latter were of the type which we believe to be characteristic of this strain.

The rarity or absence of trypanosomes from the peripheral blood of all the human cases examined, the rarity of the parasites even in the gland juice, and the difficulty experienced in infecting animals by inoculation, suggest that



it must be a very exceptional occurrence for a tsetse fly to become infected by feeding on these cases.

It seems probable, therefore, that the human infection must be dependent on some other cycle of development, including an insect and some so far unidentified animal host, the reservoir of the disease. The ordinary development of the trypanosome may take place in these two hosts. The insect, infected from the animal host, may, however, be capable of infecting human beings; but the disease may be so modified in them that they are incapable of handing on the infection any further.

*The Invertebrate Host.*—Tsetse flies are widely distributed over the district, but seldom occur in large numbers. During the months of November and December, 1913, practically all the flies caught near Ikotobo were *G. tachinoides*. Only two specimens of *G. palpalis* were taken, and a single example of *G. caliginea* was obtained near Eket. *G. tachinoides* is unquestionably the most common species throughout the neighbourhood of Ikotobo, which is at the centre of the sleeping sickness area. A point of some interest is that *G. tachinoides* is particularly easy to obtain where pigs are found, and is often seen attacking these animals. The natives themselves regard pigs as unclean, and as they recognise the fact that biting flies follow these animals, it is possible that the reason for this belief may have something to do with their association with tsetse flies.

A number of experiments were carried out to determine with what trypanosomes these flies were naturally infected. Wild *G. tachinoides* were found to be capable of transmitting *T. pecaui* (*T. brucei* of Uganda), *T. vivax*, and *T. pecorum* (*T. congolense*). Owing to the relative insusceptibility of the experimental animals employed to the Nigerian strain of human trypanosome, these experiments cannot be regarded as excluding the possibility that wild *G. tachinoides* may also be infected with this parasite. Indeed, since they are capable of transmitting these three species, it seems not improbable that they may also transmit *T. nigeriense*. Assuming that the disease is transmitted by a tsetse fly, it seems more probable that it will prove to be by *G. tachinoides* than *G. palpalis*.

*The Alternative Vertebrate Host.*—Unfortunately, it was impossible in the short time at our disposal to determine the reservoir of sleeping sickness in Eket. Neither the necessary material nor the requisite experimental animals for the purpose could be obtained, and the subject will have to remain for some future investigation.

With regard to game, the country is too well populated to harbour much, and, in fact, it is rarely met with in the greater part of the district.

In the few experiments it was possible to make we failed to implicate domestic animals. In almost every village, sheep, goats, dogs, dwarf cattle and occasionally pigs were found. *T. vivax* was found in one sheep and one dwarf cow, and *T. pecorum* in one pig and one sheep. From the feeding experiments with wild *G. tachinoides* it is evident that *T. pecaui* (*T. brucei* of Uganda), *T. vivax* and *T. pecorum* (*T. congolense*) at any rate must be common in the district, either in domestic animals or wild game, or in both. No domestic animal was found to harbour the human type of trypanosome.

*Summary and Conclusions.*—There is in the Eket District of Nigeria an endemic focus of sleeping sickness of considerable magnitude, and it is probable that a large percentage of the population either is or has been infected with the disease.

The disease is of a mild type, the mortality is low, and spontaneous cures appear to be frequent. The children are most affected. Impetigo of the

scalp, which occurs in them almost constantly, may be of etiological significance. Although trypanosomes can be found in the juice from the lymphatic glands, they have never yet been detected in the peripheral blood.

The morphology of the trypanosome differs in some respects from that of the typical *T. gambiense*, and it is possible that it is not of the same species.

It remains to determine the species of insect that transmits the disease to man in Eket, and the animal that acts as reservoir. With regard to the former question, there is some reason to suspect that *G. tachinoides* may be found to carry the infection.

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SLEEPING SICKNESS REPORT FOR THE YEAR 1913, BY DR. G. H. GALLAGHER,  
MEDICAL OFFICER IN CHARGE OF THE SLEEPING SICKNESS CAMP AT  
IKOTOBO-EKET.

Despite the fear of repetition, I think it advisable to include here information already supplied by the late Dr. Foran in his Annual Report for 1912 and also some gathered from other reliable sources.

It was in the year 1906 that the first case of Sleeping Sickness was met with by Mr. W. C. W. Eakin, of Qua Ibo Mission.

It was in 1911 that the same observer was struck by the number of such cases, and (to use his own words) he put to himself this question, "Is it possible that the dread disease of Central Africa and the Congo has at last found its way to these parts?"

So impressed was he with his findings that he straightway reported to his senior, Mr. S. A. Bill, who eventually reported the same to headquarters.

Early in 1912, as the result of this, Dr. R. W. Gray was sent to investigate the disease. To him lies the credit of being the first to view the trypanosome of Eket, which he obtained by gland puncture.

In all some twenty cases were thus discovered by him, and he formed the opinion that a special Sleeping Sickness Camp should be built at Ikotobo. After a short space of time came the late Dr. Foran, to whose untiring energy and zeal whatever little success the camp has attained is entirely due.

It was he that started the Sleeping Sickness Camp, and it was he that finished it and made of it a success, in the face of a good deal of opposition, from what we may gather. The first site selected was 400 yards away from the present camp, but the local Chiefs objected, and after a deal of difficulty the present site opposite the Mission House was eventually granted.

Here a word of praise and thanks may with justice be extended to Mr. Eakin of the Mission, who seems to have entered wholeheartedly into the aims and ambitions of the late Dr. Foran, as also practically into his trials and difficulties.

It was largely, almost entirely, I am told, by school-boys' labour supplied by Mr. Eakin that this large space (78 by 160 yards) was cleared of bush and stumped.

It was also by the same school-boy labour that the first few houses were built. Later, with struggling prison labour, the camp reached such proportions that it was thought convenient to open it for the admission of patients.

This was somewhere in the month of October, 1912, for the Case Book records the first case admitted on the 14th of that month. Later on, considerable help was given to Dr. Foran. He seems to have gone to considerable



pains and used great ingenuity in his endeavours to make the necessary detention of the patients as little irksome as possible. He encouraged any and every industry, cap-knitting and basket-making being favourites.

He devoted his best energies to the scheme, and the sincere regret which the news of his death to his patients brought forth must remain forever in the minds of those who witnessed it.

The camp is an enclosed space (160 by 78 yds.) south of the Oron-Eket road, about  $10\frac{1}{2}$  miles from Eket Station and 18 miles from Idua-Beach, Oron. As will be seen from the accompanying map, no more convenient central position could have been selected.

There are no large waterways within five miles of the camp, and though the inevitable short "bush," which is common to the Ibibio country from the custom of allowing the well-watered land to lie fallow for seven years, surrounds the site, I have no doubt even this serious defect and eyesore could be remedied if the natives were assured of the permanency of the camp.

The camp consists of staff quarters, a hospital and dispensary, and, further away from the road, the houses of the trypanoses. These last are detached blocks, nine in number, each of eight rooms. They are all bush buildings, and, since they were built in a hurry and under difficulties, must not be expected to last, and certainly will not.

It would probably be better to remodel these dwellings, rather than keep them in repair, as under the present housing system a daily inspection is laborious, besides hiding hygienic defects.

The present system has the advantage of being simple and of working without friction. Any change will probably usher in all these contraries. However, before the end of 1914 the discipline and education of the patients may have so advanced that this change may be tried without fear.

Each patient receives 3*d.* a day subsistence allowance. Besides the Medical Officer in charge, there is the following staff:—Dispenser, Sanitary Inspector (in training), Interpreter, a hospital boy and six messengers.

The Sanitary Inspector, besides visiting Oron and Eket Station, is sent to known infected towns to teach the first principles of sanitation. The messengers act as supervisors of the prison labour of the camp and recover the recalcitrant runaway patients, and are often the means of introducing new cases to it.

*Geographical and other information.*—The District extends from the sea-shore at its southern boundary. There is only the one large water-way running through it, namely, the Qua Ibo River, well to the westward. There are, however, numerous small streams, the majority of which, on this Qua Ibo side, appear to empty themselves eventually into a large stream which finds its way into the Obium River, a branch of the Qua Ibo. This larger stream crosses the Oron-Eket road,  $5\frac{1}{2}$  miles from Eket.

A glance at the map will show what a large number of cases spring from its vicinity. Two towns, especially, Ekpene-Obo and Ikot-Ese-Ekong, running to 27 and 35 cases respectively. The vegetation of the country consists of a few patches of virgin forest, which, together with numbers of oil palms and the universal short scrub spoken of above, forms, probably, the most uninteresting landscape imaginable.

Game is apparently scarce, though tradition has it that elephant and other large game are to be seen at certain seasons near the sea-shore and from there trek to the northern reaches of the Cross River.

The only antelope killed in my time at Ikotobo was of the spotted "Harness Buck" variety. Frequently one sees animals of the rodent class dart out of the bush.

Biting flies are well represented here. *Tabanus*, *Chrysops*, *Hæmatopota* and *Glossina* are the principal.

Of the latter, as the late Dr. Foran pointed out in his Annual Report for 1912, *G. tachinoides* is the preponderant species.

This must appear remarkable, nay, some have thought it incredible, so well established is it that this species favours the more open Northern Nigeria type of country.

A feature of the *G. tachinoides* here is its almost universal absence from the waterways. All these, with the exception of the larger rivers, as the Qua-Ibo, the Oron division of the Cross River and possible creeks like the Obium (mentioned above) the Awa, Stubb's and Opobo creeks, are almost free of tsetse. This I fear is in disagreement with the last annual report, but, as I am supported in this by other observers, I state it with some assurance.

*G. palpalis* is more numerous at the larger waterways mentioned above, whereas *G. tachinoides* seems almost confined to the short scrub and the farms, often some considerable distance from water.

There is one messenger specially detailed as fly boy. The result of his captures in the last three months of the year (classified by Dr. Scott Macfie) is as follows:—*G. tachinoides*, 298; *G. palpalis*, 2. One specimen of *G. pallicera* was captured and identified. *Tabanus socialis*, 2; *Tabanus* (?), 1; *Hæmopota gracilis* (?), 1; *Chrysops silacea*, 2, were also captured and identified.

*Native History of the Disease.*—Some varied accounts of the disease are given by the natives. They all have known the disease for years back. The old men of some towns (*e.g.*, Ekpene-Obo) state that it has been much on the increase in the last three years, whereas those of another (*e.g.*, Mpok) believe it has all but died out within the last five years.

These latter bring forward as testimony that their last "Nsip-Itong Doctor," of whom they used to have as many as five formerly, left three years ago owing to lack of patients.

The latter town has had the advantage of coming under European influence some fifteen years ago, this being the original headquarters of the Qua-Ibo Mission, whereas the former town is off the main road and away from such influence.

Both are corroborated by figures, the latter by comparison of figures got at by gland palpation, the former by being at the time of writing the most represented in camp. There seems to be no doubt that the disease has been prevalent in these parts for years, as the older men speak of some ancient laws which were in their times respected.

These, since they have been detailed in the last Annual Report, I will not stop to mention. Suffice it to say, they have well in view the main principles of isolation and segregation, also something of treatment, though crudely put.

These laws latterly, however, seem more respected in the narration than the observance. I believe that a considerable amount of good may be done by preserving these laws. Thus, later, it will be easier to introduce more scientific prophylactic measures.



As has often been stated, the natives recognise two stages to the disease, one with enlargement of the cervical glands, which they called "Nsip-Itong" (literally, nsip = seed, itong = neck).

The later symptoms of somnolence are known as Oduongo Idap (literally, sickness sleep). As hinted above, there are men who exercise a speciality in the disease. They are surgeons, and strive to eradicate the disease by excision of the glands. I do not think many attain this high standard.

The more refractory of the glands are treated by a wet-cupping suction process as obtains elsewhere in Africa. While at Ikot-Ekpene I was told that some Aro-Chuku doctors practice the same treatment at Bende where the Ibos call the disease "Aki-olu" (aki = nut and olu = neck). The patients firmly believe this the only treatment, and were it not for other attractions in the camp would certainly refuse the free treatment given them. They believe the disease due to a poison and the usual statement is interpreted thus: "He mash poison for foot in farm." What they mean by poison they either cannot or will not explain. They do not associate the Tsetse fly with the disease and the fly itself does not receive the same name everywhere. It is variously called Unsung Obio or town fly, from its habit of following the pigs about the town (and Usung Ubio or harmful fly because it bites them). The natives are constantly driving away all flies that may alight on their persons and do not stop to differentiate the noxious only.

*The Disease from Camp.*—The medical office being a bush building and not over well furnished, it is difficult to trace records, but from such as are to hand I gather that 123 cases were admitted to camp for treatment; of this number 11 proved negative—*i.e.*, no trypanosomes were found by gland puncture or examination—, though admitted for some urgent symptom suggestive of the disease.

The mortality as discovered from case books is 4, or 3·2 per cent.

The following is a short account of each of the four cases as extracted from the case book:—

Case No. 47. Male, aged 16, admitted 4.2.13, disease said to date back three years, well nourished, lungs and heart normal, trypanosomes found in gland juice.

5.3.13. Patient became aphasic. Later, patient reported to have died. (Apparently patient was removed.)

Case No. 68. Female, aged about 12, admitted 20.5.13, disease said to have started three years ago, somewhat wasted. Patient crippled with severe lumbar pains. . . . lungs and heart normal. Trypanosomes found in gland juice. 14.7.13 patient died (no notes in between).

Case No. 74. Male, aged 12, admitted 13.6.13, disease said to date back one year; wasted, feeble, very weak, lungs congested, dysenteric symptoms. 17.6.13 patient died.

Case No. 85. Male, aged 16, admitted 4.6.13, disease said to date back three years, wasted, dull sleepy expression, heart and lungs normal.

1.7.13. Patient sleeping more, getting feebler, unable to walk.

17.7.13. Patient died.

From this it will be seen that immediate death in at least one instance must be attributed to intercurrent disease. (Case No. 74.)

Besides these 123 cases in the case book, some ninety cases are mentioned in which parasites were found without dates. So I merely mention the fact without adding them to the numbers under treatment. They were apparently cases found while travelling.

On the last day of the year there were 97 cases resident in the camp, and if we follow an arbitrary division, such as (a) primary or those in apparent good health, (b) secondary or sleeping stage, (c) tertiary or those showing nervous symptoms, we have the following classification :—

Primary	...	...	...	...	88 or 90·8 per cent.
Secondary	...	...	...	...	6 or 6·2 „ „
Tertiary	...	...	...	...	3 or 3 „ „

It is worthy of note that two of these secondary cases failed to reveal parasites, as also two of the tertiary.

(a) *Aetiology*—(a) *Age*.—I have arranged a table below under the following ages :—0–5, at which age they are not expected to labour ; 6–11, at which age their duties are light ; 12–16, when their labour grows heavier ; over 16, when they labour as adults :—

Age.	Numbers at age.	Percentage.
0– 5	4	3·2
6–11	53	43
12–16	40	32·3
over 16	26	21·5

(b) Sex of the 123 cases :—84 were males and 39 females.

MALES.				FEMALES.			
Age.	Numbers at this age.	Percentage of total at this age.	Percentage of aggregate total.	Age.	Numbers at this age.	Percentage of total at this age.	Percentage of aggregate total.
0– 5	2	50·0	1·7	0– 5	2	50·0	1·7
6–11	41	77·3	33·3	6–11	12	22·7	9·8
12–16	22	55·0	17·8	12–16	18	45·0	14·6
–16	19	73·0	15·4	–16	7	27·0	5·7

(c) *Occupation*.—As far as can be gathered from native information, the duties assigned to a child under six are those confined in and about the house, but also fetching his or her share of water. From six to eleven they would be expected to carry larger supplies and to go oftener, and also to fetch firewood.

From twelve to sixteen these occupations continue, and to them are added some more strenuous, as farm work, and, in the case of the males, the procuring of “ Nimbo,” the more or less intoxicant drink obtained from the tree of that name found in the swampy places.

Thus we see that the duties assigned to the ages six to sixteen are such as are most liable to expose them to the tsetse fly, and are also such as would allow of dawdling.

Whereas after sixteen their duties are mainly farming and carrying produce to the factories and local markets.



(d.) *Carrier of Infection*.—This has been touched on under Head 2. Suffice it to say here, that *G. tachinoides* are in much large numbers than *G. palpalis* or other species. *G. tachinoides* is plentiful in the short scrub everywhere and of course follows the domestic animals.

Regarding this latter, the natives have observed that the pig is the worst offender in this way attracting many more flies than any other animals. As a result, pigs are usually forbidden in most towns, though occasionally one or two are to be seen.

*Signs and Symptoms*.—I propose here to enumerate briefly, and more or less in the order in which they are said to occur by the patients, the prominent signs and symptoms of the disease.

The disease here, as elsewhere, can be divided into the three divisions, viz. :—(a) Primary (“cas en bon état” of the French); (b) Secondary (the stage of lethargy and somnolence); (c) Tertiary (characterised by an exaggeration of (b) and the onset of nervous lesions).

*Primary Stage*.—Except for the enlargement of the cervical glands this is a stage of symptoms.

(a.) First among these is headache. This is complained of in every one of the cases. In fact, so struck was I with the prominence given it by each trypanose, that when an opportunity occurred, I put it to the test.

Just before the end of the year an adult came to the out-patients with the history of headache of over a year’s standing. A finger passed down her neck showed a few slightly enlarged glands. She apparently guessed what we were looking for and assured us she had not got “Nsip-Itong.” However, puncture of one of these glands showed Trypanosomes.

The headache seems to be severe. The picture I have is of a boy of twelve or so who approaches with a handkerchief or string tied round his head and whom you knew yesterday as a smiling active youth. Stop him and ask him what is the matter and he will promptly answer “Ibuot” (headache). This like the next symptom comes on in the early afternoon.

(b.) *Fever*.—This is of the usual type so well described in the text books. Here the majority of the patients being children, malaria must leave its mark on the temperature chart.

The late Dr. Foran has repeatedly noted the incidence of malaria in the case book, which later was confirmed by Dr. Scott Macfie.

The highest temperature recorded in my time was 104·5, though this is uncommon. Here as elsewhere it is accompanied by a rapid pulse, often of 120 or more.

(c.) *Rash*.—Here I speak with diffidence. I may safely say that I have never during the year seen anything similar to the classic circinate erythema one reads of.

The most common rash is an impetigo—probably of the scalp. It is possible that it is only a concurrent affection. Probably though, this weak parasite, on the principle of symbiosis, requires the presence of septic organisms and their toxins to take root in the glands.

On the other hand, these septic processes may be the means of inhibiting and retarding the multiplication and virulence of the Trypanosome. Very

rarely the impetigo is carried on to the body. Next probably in order of frequency of rashes is a sparse, scattered, varicella-like eruption, which by the time the patient gets here is only represented by pits and scars. A dry wrinkled, scaly condition of the skin is also met with, and I believe will be found to be a feature of the disease.

(*d.*) *Glands*.—These are sufficiently well known to escape repetition here. Practically all groups of glands are affected, though, as the late Dr. Foran has pointed out, parasites have not been obtained in any but the posterior cervical group.

The enlargement at times of the glands about the mastoid and those of the submaxillary and submental groups produces a picture not unlike that of mumps, as Dr. Foran has also noted.

A feature under this heading which is invariably present, but which I do not remember having impressed on me before, is pain in the enlarged glands. This is constant, though liable to exacerbations, so patients assert.

It is described as synchronizing with the phases of the moon, being worst at the new moon and all but disappearing with the moon at its full.

It is indeed a fanciful suggestion (I have had it from adults as well as the younger people) but one worthy of being earmarked as showing possibly the times at which the parasites become unusually active “the outburst of multiplication” spoken of by Miss Robertson in her paper before the Royal Society. (Reports of Sleeping Sickness Commission of the Royal Society, No. 13.)

(*e.*) *Œdema*.—The œdema of the text books is very constant here. It is difficult with the short space of time since the camp was opened to gauge the length of the primary stage, but at least this much can be said, viz., there are a number of cases in camp who were admitted the year before, and have passed through this year under treatment without advancing to the second stage.

*Secondary Stage*.—This is the stage of lethargy and incipient somnolence. As stated above, there are only nine representative cases in camp. In this stage would be included the slight tremor of tongue and lips.

*Tertiary Stage*.—Characterised by a deepening of stage (*b*) and the onset of nervous lesions. Probably the most constant nervous signs are increased reflexes and ataxic gait. I have not seen here the deep somnolence and coma ending in death, the pictured *finale* of the disease, as I have seen elsewhere (Ikot-Ekpene). Unusual symptoms, amenorrhœa, were complained of in the adult case quoted under headache. This is the only instance of it.

*Dimness of Vision*.—This was noticed in one case, and took on the following features:—(*a*) Blurring of vision in strong sunlight, with some amount of apparent photophobia (but without corneal inflammation); (*b*) when brought in from sunlight to shadow the patient, a boy of twelve, instinctively puts his hands out as if afraid of colliding with objects unseen.

The boy has also a staggering gait, probably intensified by defects in vision. As he also has well marked exaggerated reflexes and Romberg’s sign, he is to me an example of the incipient tertiary stage.

Having no ophthalmoscope, I cannot speak of the condition of the fundus. It cannot well be “drug atrophy,” as he assures me it is improving under arsenical treatment.

*Romberg’s Sign*.—This classical sign is to be met with, and indeed I use it as a coarse test to eliminate the later stages. It can be simulated by an



exaggerated weakness of the muscles, but in this case the reflexes are not constantly exaggerated, and the condition is obvious from the coarse swaying of the body even without the eyes shut.

*Hyperæsthesia.*—A reliable history of Kerandel's sign is difficult to obtain, owing to difficulty in interpretation and comprehension of its importance. However, it was acknowledged to me in two instances with some degree of assurance, and I give it for what it is worth. I have tried a simpler method, viz., firm pressure over the shin. This seems unpleasant to those unaffected with the disease, but distinctly painful to those suffering from the disease.

*Difficulty in swallowing* was met with in one case (to be described later), accompanied by injection of the fauces and rigidity of spine.

*Diagnosis.*—No other method of diagnosis but gland puncture has been used. As the late Dr. Foran has pointed out, the parasite is not to be found in the peripheral blood, either in thin or thick de hæmoglobinised films. This has been confirmed by both Dr. Macfie and myself. With reference to gland puncture, so difficult is it to obtain the parasite even by this means, that one unsuccessful puncture is not enough to prove a case negative, as it has been my lot to obtain the parasite on the fifth attempt.

Dr. Macfie has, moreover, failed to infect a guinea-pig with 5 c.c. of blood obtained from the basilic vein of the forearm.

*Gland Palpation.*—A series of gland palpations was undertaken by Dr. Macfie and myself in two towns; one, Ikot-Offiong, about 2 miles to the east of the Camp, the other, Mpok, referred to before (about 14 miles west, and across the Qua Ibo River).

This was undertaken to gauge roughly the extent to which each town was infected, on the axiom that “in an infected country enlarged glands mean Trypanosomiasis.” It is interesting to note that the former is the town from which the first case seen by Mr. Eakin came.

The inhabitants of the latter town assert that they have now hardly any Nsip-Itong amongst them. We visited Ekpene-Obo (a town very well represented in the camp), but failed to get the natives to turn out in their proper numbers.

Below is a table of comparison of the two towns. + refers to glands obviously enlarged; + — sufficiently enlarged to be grasped; + — — enlarged but not sufficiently to be grasped; — is normal. The ages are those selected by Dutton and Todd in their investigations in the Gambia :—

		IKOT-OFFIONG.						MPOK.					
Sex	...	Male.			Female.			Male.			Female.		
Age	...	0-13	14-44	45	0-11	12-39	40	0-13	14-44	45	0-11	12-39	40
+	...	8	—	—	7	—	—	5	—	—	3	1	1
+	—	14	—	—	21	5	4	49	9	—	35	12	1
+	— —	5	4	1	8	6	4	67	77	13	106	215	20
—	...	2	14	5	4	13	12	4	74	15	28	76	14
		53			84			313			512		
Total	...	137						825					

Treatment.—The following is the scheme of treatment carried out by me : (a) Three times a week a prophylactic dose of quinine sulphate, grs. 10, in solution ; (b) twice a week a solution of Liqr. Arsenicalis, min. i. ; (c) once a week a dose of atoxyl, grs. 6, intramuscularly. (a), as I have pointed out before, is very necessary since the majority are children and seem heavily infected with malaria parasites. (b) It is hoped here to bring about a “ blood tone,” wherewith to fight the various septic conditions that seem so prevalent among them and also to assist the specific action of the atoxyl so variously condemned at different times. (c) Atoxyl.—There is evidence enough here of the immediate benefits accruing from this drug. If the bright, happy condition and continued good health, which must be apparent to every visitor to the camp, were not in itself enough, I add a few extracts from the case books :—

Case 79.—“ Wasted, feeble, debilitated, sleeping much more than normal, many ulcers, resembling bed sores, about body, muscles of left arm contracted, drawing elbow into flexed position, left leg drawn after him when walking (this lesion occurred eight months before admission, previous to which he was apparently well).”

Here, we must argue, is a case well advanced in the somnolent stage (videlicet the bed sores).

One may be excused for concluding this lesion of the pyramidal tract (at some point above the decussation of the crus) to be the result of trypanosome infection. If so, the patient is to be looked upon as a well advanced case. To-day he is bright and cheerful and about the most popular boy in the camp, though his paresis will not allow him to join in their sports.

Case 136.—“ The patient was brought to the camp on his mother’s back. She gave the following history : Four months previously she noticed the boy could not run well, but since two weeks this has become worse and he did nothing but lie down. She had also noticed the boy sleeping inordinately during the day, so determined to bring him to camp. On admission, he could neither stand nor walk—glands slightly enlarged, no parasite found, exaggerated knee joints—the boy was so weak he had to be fed by his mother. He was immediately put under atoxyl, and six weeks later the boy was well and about.”

These are only two of the cases. They themselves (the patients) speak well of the success of their treatment, and after all that says a lot. No other drug has been tried, though during the next year it is intended to try salvarsan on the more intractable cases.

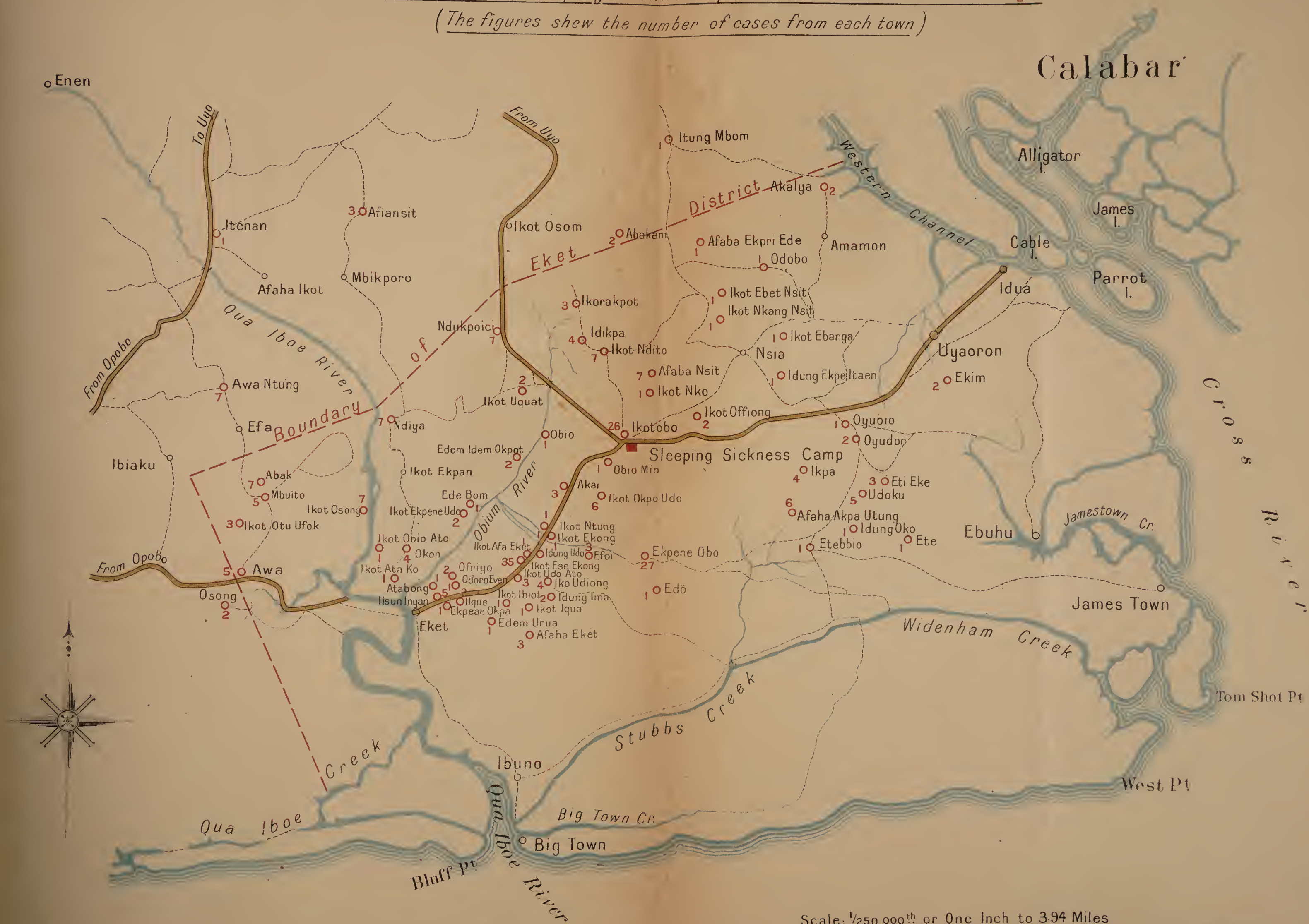
*Parasite.*—The late Dr. Foran stated that he thought the parasite identical with *T. gambiense*. In May, 1913, Dr. Macfie’s pamphlet on the causative trypanosome in Eket was published, wherein from morphological differences he named the parasite *T. nigeriense*. He argues well for a new parasite, and clinically he has good ground for support, firstly, the chronicity of the disease (most of the patients date the enlargement of the cervical glands back to two or three years) ; secondly, the apparent low mortality, which is much lower than that of the Gambia, the Congo or Rhodesia ; thirdly, the difficulty with which the parasite is to be obtained and the comparative non-infectivity of the blood ; fourthly, the possibility of an unusual carrier of infection, seeing that *G. palpalis* is unevenly distributed, whereas Dr. Foran has shown the disease to be widespread.

*Animal Trypanosomiasis.*—Dr. Macfie, who undertook this part of the work, authorises me to say that he has found *T. brucei* in both pig and sheep, as also *T. vivax* in sheep.



# MAP ILLUSTRATING ANNUAL REPORT, 1913.

Note: Towns from which Sleeping Sickness patients have come shewn - 2°  
(The figures shew the number of cases from each town)



Scale:  $\frac{1}{250,000}$ th or One Inch to 3.94 Miles

Miles 4 3 2 1 0 4 8 12 Statute Miles

*Prepared from Government Map, and Map of W.C.W. Eakin Esq, F.R.G.S.*

JANUARY, 1914.





The only antelope examined showed a polymorphic trypanosome, not unlike the human type, but of which, for want of further study in inoculated animals, he is not prepared to say more.

Recommendations—(a) That the camp be continued on the lines it has run on so far, *i.e.*, a gift of a subsistence allowance and no compulsion beyond a little camp discipline.

(b) That no permanent building be erected. This would allow of the transference of the camp and its inmates to some other point which may become more infected. At present the camp taps the south-western and western corners of the district, leaving the eastern and north-eastern parts untouched.

The latter appears, at least there is no evidence to speak of to the contrary, to be not so heavily infected as the former just now.

(c) That their old laws of segregation be encouraged in the Native Courts. This would allow of a few prosecutions for housing "runaways" from the camp (*i.e.*, known infected persons) without declaring openly for compulsory legislation, which I feel will end in disaster.

(d) That more ground be immediately rented or demanded to the extent of at least 50 yards from the present boundaries of the camp. This would allow of an extended fly-free area.

(e) This leads me to my last recommendation. As has been pointed out, tsetse are most numerous in the short scrub which abounds in the district.

This being so, it is apparent that here is our field for immediate action. In fighting it, we are up against immemorial customs as also the slow moving mind of the native. With their present system of agriculture the only remedy that occurs to my mind is to force them to cut the bush every dry season. But of course this would mean a vast amount of labour, certainly more than the Ibibio would care for and probably more than he is capable of.

The only suggestion I have, and I give it for what it is worth and with great hesitation, feeling I am entering on a subject out of my range.

Were the people induced to place the whole of their land under cultivation this would certainly do away with the short scrub. But how? I can only suggest their enlightenment into the principle of the rotation of crops.

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#### NOTES OF TWO CASES OF POROCEPHALUS ARMILLATUS INFECTION OCCURRING IN MAN, BY DR. A. H. WILSON, M.O. DEGEMA.

Case 1. Krooboy, employed by the Company of African Merchants, Abonnema. Age about 18 years. History: Admitted to the Degema Hospital on June the 7th with ulceration of the cornea, right eye; fairly well nourished, but not robust; made no further complaint and examination was negative, but he was reported to have been losing strength recently, getting about his work in a languid and feeble way. It was noticed that his general condition while in hospital was one of gradual and progressive asthenia, and within two weeks of his death the gait became staggering, reflexes were lost, and there were some vague pains about the legs, but no

other local signs or symptoms, with the exception of rapid heart's action, but no murmur and no signs of cardiac incompetency. He died in much the same condition on July 14th.

Post-mortem examination.

External appearance presented nothing abnormal, and the body was fairly well nourished.

*The Thorax.* Pericardium generally adherent, obliterating the pericardial cavity. Right ventricle thin and dilated. Left ventricle normal, valves normal. Lungs very small but healthy; no larvæ were found after careful search. There were no lung symptoms during life. Old pleuritic adhesions both sides.

Abdominal cavity contained a little free peritoneal fluid but no sign of peritonitis. Liver slightly enlarged; general hepatitis. Liver substance nutmeg appearance. On the surface two cicatricial-looking patches, which when cut into were found to be encysted larvæ of *Porocephalus armillatus*. On making successive sections throughout the liver many more, about ten in all, were found, none more than half to three-quarters of an inch from the surface. On searching the mesentery one larva was found. The kidneys, pancreas, stomach and intestine were normal.

The cause of death was attributed to "Porocephalus infection" accelerated by pericardial disease.

Case 2. Male, age about 50. Ex-convict from Ahoada District. Transferred to Degema Prison. Admitted to hospital for observation 7.4.12. From this note in the prison register it may be inferred, I think, that the symptoms complained of were vague and indefinite, and that the physical examination was negative. Transferred to Bonny 12.4.13, re-transferred to Degema 25.8.12. It was noted then, on admission, that he was in an emaciated and generally enfeebled condition. To "go into hospital," but no definite disease was diagnosed to account for his condition. Asthenia was progressive, so that he could only walk for a few yards. He was discharged time-expired on 5.9.13, but transport not being available for sending him back to Ahoada, he remained in the prison. About the same date, a week before his death, it was noticed that his abdomen was somewhat swollen, which on examination was found to contain fluid. Two days later the feet and legs became œdematous, and asthenia was present to an extreme degree. On the 11th dyspnœa and cough led to an examination of the chest, and from the signs present congestion of the lungs was diagnosed. Two days later he died; no fever; urine normal.

Post-mortem examination made the same day.

General appearance of the body emaciated, with slight œdema of the legs. On opening the body a large amount of singularly watery limpid fluid escaped.

Thorax—heart normal. Pleural cavity—a few old adhesions on both sides. Both lungs much congested, and on the visceral surfaces of both pleuræ were patches of ecchymoses. On section a large amount of blood and frothy fluid escaped, the condition being one of general congestion and œdema.

Abdomen—the presence of fluid in the abdominal cavity has already been noted; there was no peritonitis. Liver appeared to be below normal size, tough in consistence and on the surface numerous cicatricial patches. On further inspection a nodule one-third of an inch in size was noticed on the right lobe. This was found to be an encysted larva. The larva was enclosed in a very tough and fibrous capsule, but the ringed nature of the larva could be seen through it. The liver was then thoroughly searched and four other larvæ were found. Two of these cysts were opened and the larvæ extracted; no others were found. The mesentery was thoroughly searched, with negative



result. The spleen, kidneys, pancreas, stomach and intestine were all found quite normal. The lungs were searched for larvæ, but none were found.

The diagnosis was made from post-mortem examination—"Porocephalus armillatus infection" accelerated by congestion of the lungs.

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PRELIMINARY NOTE ON THE OCCURRENCE OF BABESIASIS OF DOMESTIC ANIMALS IN NIGERIA, BY DR. J. W. SCOTT MACFIE.

Of the diseases of domestic animals in Nigeria considerable attention has been paid to trypanosomiasis, but so far but few observations have been made on babesiasis, and such as has been recorded have related mainly to the disease in dogs. No disease of cattle characterized by hæmoglobinuria appears hitherto to have been reported, and for this reason, perhaps, the presence of babesiasis in these animals seems to have been entirely overlooked. The insignificant size of the parasites, moreover, which would easily escape detection unless especially searched for, may account for the scant attention paid to it.

In August, September and October, 1913, blood films were obtained from the slaughter houses at Calabar, Warri, and Onitsha, and a few also collected at Lagos. Altogether 59 animals were examined—15 goats, 17 Hausa cattle, 2 dwarf cattle and 25 sheep. In 15, 2 Hausa cattle, 2 dwarf cattle and 11 sheep, *Babesiæ* were detected, that is, over 25 per cent. of the animals were found to be infected. As some of the blood films were unsuitable for examination for minute parasites, it is possible that the percentage should be placed even higher than this.

Station.	Examined.				Number infected.
	Goats.	Sheep.	Hausa Cattle.	Dwarf Cattle.	
Calabar ... ..	12	—	17	—	2 Hausa Cattle.
Ikotobo ... ..	—	—	—	2	2 Dwarf " *
Lagos ... ..	—	5	—	—	4 Sheep.
Onitsha ... ..	3	9	—	—	7 " "
Warri ... ..	—	11	—	—	None.
Totals ... ..	15	25	17	2	15

The parasites, which were very small, consisted of a minute dot of chromatin and a ring-shaped or pear-shaped protoplasmic body. In a few cases the chromatin assumed the form of a crescent, and occasionally parasites were met with in which there were two chromatin dots situated at some distance from one another. Forms with four chromatin masses forming a cross were also found. Rod-shaped parasites occurred in some of the animals. In the majority of cases the parasites were numerous, but in three apparently healthy sheep examined at Lagos they were scanty. One of these sheep had been under close observation for two months before its blood was examined, and during this time had never shown any signs of illness, neither did it appear to be unwell at the time of examination, nor during the succeeding three months. Hæmoglobinuria was never observed. The other two sheep were found living in a compound at Lagos in which a case of yellow fever had occurred. They appeared to be perfectly healthy animals, but on examination a few minute

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\* The identity of these parasites has not yet been determined. It is probable, however, that they will prove to belong to the genus *Theileria*.

ring-shaped *babesiæ* were found in the red corpuscles. Similar *babesiæ* have also been found in dogs at Lagos and in guinea-pigs at Calabar. The close resemblance of these parasites to the *Paraplasma flavigenum* of yellow fever is remarkable, but will not be discussed here.

The majority of the cases of babesiasis occurred in animals that were about to be slaughtered, and no evidence was available to show whether the disease was accompanied by severe symptoms or not. The infected animals examined at Lagos were healthy, but in them the parasites were rare. A somewhat larger infection in cows of the dwarf breed has recently been observed at Ikotobo. The animals were in splendid condition, and their urine was free from hæmoglobin. In some of the sheep and cattle examined at Onitsha and Calabar considerable numbers of parasites were found. The animals in these cases had been imported into Southern Nigeria from the north.

It is unlikely that such heavy infections could have been entirely benign.

In the greater part of Northern Nigeria horses and cattle are plentiful, as well as the smaller domestic animals. The cattle are of the large hump-backed breed, and are generally referred to as Hausa or Fulani cattle. In Southern Nigeria, on the other hand, horses cannot be kept except in a few places, and the only cattle to be found are of the dwarf breed. The reason for this difference has been attributed to the denser nature of the vegetation in the South, and the greater prevalence of tsetse flies and the accompanying trypanosomiasis. This is no doubt in the main correct, but the observations recorded above suggest that babesiasis may be a subsidiary factor.

Southern Nigeria, being without suitable cattle, is largely dependent on Northern Nigeria for its meat supply. In the dry season immense herds of cattle trek south from the provinces of the north. It is well known that but few of the animals that set out on this journey eventually reach the coast towns. The majority sicken on the road, and have to be slaughtered.

In a former paper an account was given of the examination of cattle trekking through Ilorin on their way to the coast, in which it was shown that very many of them were suffering from trypanosomiasis. The herdsmen are quick to note the first signs of sickness in their stock, and on detecting them at once kill the animals and dispose of the meat at the best price they can obtain. Considerable loss is undoubtedly entailed as the animals have often to be slaughtered in unfavourable markets.

The blood films obtained from the slaughter houses at Onitsha and Calabar were from animals that had been bred in Northern Nigeria and had trekked South from that country. Those animals slaughtered at Calabar had, of course, reached the end of their journey, but those killed at Onitsha had not. It is improbable that the latter would have been sacrificed had they not been showing indubitable signs of illness; and the large number of *babesiæ* found in their blood suggests that in them these parasites were the cause of a serious disease. Since apparently healthy domestic animals in Southern Nigeria have been found infected with *babesiæ*, it is probable that the imported animals, from Northern Nigeria, became infected in this country, and not possessing the natural immunity of the indigenous stock, were seriously affected.

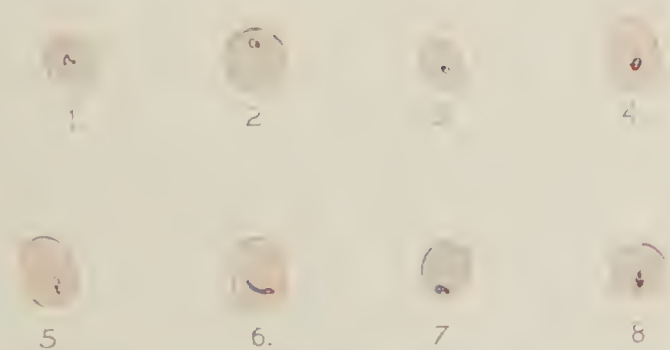
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REPORT ON CASES OF FEBRILE ILLNESS OF SHORT DURATION AND PECULIAR TYPE  
OCCURRING AMONGST EUROPEANS ON THE RESIDENCY HILL, IBADAN,  
SOUTHERN NIGERIA (? PAPPATACI FEVER), BY DR. W. S. CLARK.

As pappataci fever has not so far been described from Nigeria, it may be of some interest to put on record the following cases which, if not pappataci fever, very closely resemble that disease.



BABESIAE FROM DOMESTIC ANIMALS  
IN NIGERIA.



Magnification

X 1,000.

- 1 & 2. From a sheep at Onitsha.  
3. From a sheep at Lagos.  
4 & 5. From a Hausa cow at Calabar.  
6, 7 & 8. From a cow of the dwarf breed at Ikotobu.





The cases occurred amongst Europeans on the Residency Hill, Ibadan, the European population of which was six at the time.

Case (1). This was a male, about 25 years of age, and of English nationality. The first symptoms complained of began suddenly in the morning of the 24th December, 1912. I saw him about 10 a.m. and he complained of sickness and vomiting, headache, and particularly pain in the back. His temperature was  $102^{\circ}$  F., pulse full and 85 per minute; tongue coated, but tip and edges very red; skin moist. The blood was examined but no parasites found. There was no tenderness over liver or spleen. The urine was clear and not high coloured, the evening temperature was  $102.5^{\circ}$  F. On the 25th his condition was rather better and he was found sitting up in a chair, temperature  $100^{\circ}$  F., which rose in the evening to  $103.2^{\circ}$  F. and pulse to 95. The skin was moist—he had had a profuse sweat in the morning, which he gave as his excuse for being out of bed. During the night he had another profuse sweat and seen on the morning of the 26th was free from fever and remained so.

Case (2). Also a male, was about 35 years of age and of English nationality, occurred on 15th January, 1913. I saw and spoke to this man at 9 a.m. and he was then in ordinary health; at 11 a.m. he sent a message that he had an attack of fever and when I saw him his temperature was above  $102.5^{\circ}$  F. and he complained of headache over his eyes and very much pain in his back and also of sickness. His face was slightly flushed, his tongue was red all over, as was also his throat, very similar to the appearance in scarlet fever, but his throat was neither sore nor dry. Pulse was about 80 per minute and full, skin moist, and his urine was pale and clear all through the attack. His blood was not examined. Later his temperature rose to a little above  $103^{\circ}$  F. and his pulse to 90. There was no tenderness about liver or spleen. He was given aspirin and next morning he was free from fever; he had had a profuse sweat during the night. Within 24 hours he felt quite well. He informed me that he had suddenly become ill whilst riding on horseback to his office and that he felt so ill that he was afraid he should fall off his horse.

Case (3). Female, English, and about 26 years of age, was the wife of case (2), she felt quite well and took her breakfast on the morning of 17th January, 1913, but between 10 and 11 a.m. became sick and feverish, with headache and backache, especially the latter, and also a feeling of constriction in the chest, slightly painful on taking a deep breath. The temperature rose to a little above  $104^{\circ}$  F. in the evening and the pulse rate to 100 per minute. The tongue and throat were fiery red, but there was no soreness. There was no tenderness over either liver or spleen, the skin was moist, urine pale and clear and the bowels constipated. The blood was examined, but nothing abnormal was found. Aspirin was given. During the night there was a moderate sweat and in the morning the temperature had fallen to normal and patient said she felt quite well: the tongue was red and glazed and the throat still red. Next day, the 19th, in the late afternoon the temperature again rose and at 8 p.m. when I saw her again, it was  $103.8^{\circ}$  F. and there was conjunctivitis of one eye. The temperature fell to normal during the night and patient felt well except for the conjunctivitis, which lingered on for a fortnight longer. (Patient previously had trouble with the same eye, having apparently suffered from corneal ulcer.) On the 21st and 23rd the temperature rose to  $99^{\circ}$  F., after that it remained normal.

Except for the usual prophylactic dose no quinine was given in these cases.

Two other Europeans residing on the Residency Hill suffered about the same time from a febrile attack of short duration, with headache and particularly backache; one I did not see during the attack and the other was recovering when I saw him. The latter had a temperature of  $102.8^{\circ}$  F.,

with symptoms of gastritis, but all the symptoms subsided with remarkable quickness in 24 hours. Case (2) informed me that he thought his bungalow was infested by "mosquitoes" and that they got inside his mosquito net at night, although they could not be found inside in the morning. He pointed out spots of blood on the lower border of the mosquito net at the foot of the bed, and I also found a few small spots on the sheet at the foot of the bed and also on the pillow. Mosquitoes were moderately numerous about these bungalows and those examined were *Culex fatigans*, *C. tigripes*, *Stegomyia* and *Culicomyia*; no Anophelines were found at that time of the year. Sand flies were fairly numerous and sometimes troublesome in the evenings. (None were caught, so it is not known what they were.)

The peculiar points about these cases, especially (2) and (3), which were more particularly observed, were the backache specially mentioned by each, the red tongue and throat and the character of the pulse, which felt like a full normal one, although the temperature was moderately high in all cases, and the recovery by crisis. The onset was also remarkably sudden in each case. I was the only other European on the Residency Hill and was not attacked by any febrile illness. My bungalow is equally infested by mosquitoes, but I rarely saw a sand fly and they certainly did not trouble me in the evening or during the night.





# IDENTIFICATION OF INSECTS COLLECTED AT CALABAR, SOUTHERN NIGERIA.

By DR. JOHN CURRIE.

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## COLEOPTERA.

### CARABIDÆ.—

*Ochyropus hercules*, Murr.

*Chlæhius* sp.—not in the British Museum.

### COCCINELLIDÆ.—

*Chlomenes lunata*, F.

### BOSTRYCHIDÆ.—

*Apate degenera*, Murr.

*A. terebrans*, Pallas.

### LYCIDÆ.—

*Lycus latissimus*, L.

### ELATERIDÆ.—

*Melanotus umbilicatus*, Gyl.

### TENEBRIONIDÆ.—

*Taraxides hypocritus*, Westw.

*Chiroscelis digitata*, F.

*Pyonocerus sulcatus*, F.

### LAGRIIDÆ.—

*Lagria viridipennis*, F.

### LUCANIDÆ.—

*Metopodontus savagei*, Hope, F.

### COPRIDÆ.—

*Anachaicos cuprous*, F.

*Cathcarsius gorilla*, Thoms, F.

### MELOLONTHIDÆ.—

*Apogonia nitidua*, Thoms.

*Camenta* Sp.—not in B. M.

*Schisonycha africana*, Castn.

*Trochaius carinatus*, Schonn.

## RUTILIDÆ.—

*Anomaia* Sp.—not in B. M.

## DYNASTIDÆ.—

*Prionoryctes rufopiceus*, Arrow.

## CETONIIDÆ.—

*Ceratorrhina cavifrons*, Westw.

## CURCULIONIDÆ.—

*Lixus rhomboidalis*, Boh.

*Lixus* Sp.

*Meccocorynus westermanni*, Hhn.

*Sipalus guineensis*, F.

## CERAMBYCIDÆ.—

*Piocederus chloropterus*, Chev.

*Xystrocera femorata*, Chev.

## LAMIIDÆ.—

*Anchylonotus tribius*, F.

*Moecha hecate*, Chev.

*M. molator*, F.

*Monohammus ruspator*, F.

*Prosopocera ocellata*, Chev.

## CRIOCERIDÆ.—

*Lema armata*, F.

## GALERUCIDÆ.—

*Diacantha melanoptera*, Thoms.

*Hyperacantha* Sp.—not in B. M.

*Monolepta elegans*, Allard.

## RHYNCHOTA.

## PENTATOMIDÆ.—

*Aspavia armigera*, F.

## REDUVIIDÆ.—

*Physorhynchus gigas*, H. S.

*Phonocotomus fasciatus*, P. de B



# REPORTS ON BLOOD-SUCKING FLIES COLLECTED IN SOUTHERN NIGERIA IN 1913.

STATION.	COLLECTOR.	FAMILY.	
Ibadan ...	... Dr. Hungerford ...	Simuliidæ	<i>Simulium.</i>
		Bychodidæ	<i>Phlebotomus.</i>
		Tabanidæ	<i>Tabanus subangustus.</i>
			<i>Hæmotopota decora.</i>
			<i>Glossina palpalis.</i>
		Muscidæ	<i>Bengalia depressa.</i>
			<i>Stomoxys calcitrans.</i>
			<i>S. inornata.</i>
		Hippoboscidæ	<i>Hippobosca maculata.</i>
		Ixodidæ	<i>Rhipicephalus simus.</i>
			<i>Boophilus annulatus.</i>
Epe ...	... Dr North ...	Culicidæ	<i>Anopheles.</i>
			<i>Culex fatigans.</i>
			<i>Stegomyia facia.</i>
		Muscidæ	<i>Glossina palpalis.</i>
Ikom ...	... Dr. Brierly ...	Muscidæ	<i>G. palpalis.</i>
			<i>G. longipennis.</i>
			<i>G. caliginea.</i>
			<i>G. pallicera.</i>
			<i>Tabanus secedens.</i>
		Tabanidæ	<i>T. ruficrus.</i>
			<i>T. fasciatus.</i>
			<i>T. obscurefumatus.</i>
			<i>T. tæniola.</i>
			<i>T. combustus.</i>
Obubra ...	... Dr. Brierly ...	Tabanidæ	<i>Chrysops silacea.</i>
			<i>Tabanus secedens.</i>
			<i>T. fasciatus.</i>
		Muscidæ	<i>Chrysops silacea.</i>
			<i>Glossina palpalis.</i>
Ikotobo-Eket ...	... Dr. Gallagher ...	Tabanidæ	<i>G. fusca.</i>
			<i>Chrysops silacea.</i>
			<i>Tabanus socialis.</i>
		Muscidæ	<i>Hæmotopota.</i>
			<i>Glossina tachinoides.</i>
			<i>G. palpalis.</i>
			<i>G. pallicera.</i>
			<i>G. caliginea.</i>

REPORTS ON BLOOD-SUCKING FLIES—*continued*.

STATION.	COLLECTOR.	FAMILY.	
Degema ...	Dr. Wilson ...	Culicidæ	<i>Anopheles costalis</i> . <i>A. aureosquamiger</i> . <i>Culex duttoni</i> . <i>C. tigripes</i> . <i>Culicomyia nebulosa</i> . <i>Stegomyia africana</i> . <i>S. fasciata</i> . <i>Culex invidiosus</i> . <i>Ochlerotatus domesticus</i> . <i>O. nigricephalus</i> . <i>Tæniorhynchus annettii</i> . <i>Ingramia nigra</i> . <i>Mucidus mucidus</i> .
		Tabanidæ	<i>Tabanus socialis</i> . <i>T. secedens</i> . <i>T. thoracinus</i> . <i>T. fasciatus</i> . <i>T. obscurefumatus</i> . <i>Chrysops silacea</i> .
		Muscidæ	<i>Glossina palpalis</i> . <i>Stomoxys omega</i> .
Oshogbo ...	Dr. Morehead ...	Culicidæ	<i>Pyretophorus costalis</i> . <i>Myzomyia funesta</i> . <i>Stegomyia fasciata</i> . <i>Culex fatigans</i> .
		Muscidæ	<i>Glossina palpalis</i> . <i>G. tachinoides</i> . <i>G. fusca</i> . <i>Lucilia</i> . <i>Auchmeromyia</i> .
		Hippoboscidæ	<i>Hippobosca maculata</i> .
		Tabanidæ	<i>Chrysops silacea</i> . <i>Hæmatopota torquens</i> .
Aboh ...	Dr. Clark ...	Culicidæ	<i>S. fasciata</i> . <i>Mansonoides uniformis</i> . <i>C. quasigelidus</i> . <i>Myzorrhyncus mauritanus</i> . <i>Pyretophorus costalis</i> . <i>Myzomyia funesta</i> .
		Muscidæ	<i>Glossina palpalis</i> . <i>G. caliginea</i> .
		Tabanidæ	<i>Tabanus fasciatus</i> . <i>T. secedens</i> . <i>T. socialis</i> . <i>T. taeniola</i> . <i>Hæmatopota torquens</i> .



## REPORTS ON BLOOD-SUCKING FLIES—continued.

STATION.	COLLECTOR.			FAMILY.	
Badagry ...	...	Dr. Clark	...	Tabanidæ	<i>Tabanus fasciatus.</i> <i>T. socialis.</i> <i>T. taeniola.</i> <i>T. thoracinus.</i> <i>Hæmatopota torquens.</i>
				Muscidæ	<i>Glossina longipalpis.</i> <i>G. fusca.</i> <i>G. palpalis.</i> <i>Stomoxys calcitrans.</i>
				Culicidæ	<i>Culex insignis.</i> <i>Phagomyia nigricephala.</i> <i>Stegomyia africana.</i> <i>S. fasciata.</i> <i>Mansonoides uniformis.</i> <i>Culiciomya nebulosa.</i> <i>Culex guiarti.</i> <i>Pyretophorus costalis.</i>
Epe ...	...	Dr. Clark	...	Tabanidæ	<i>Tabanus thoracinus.</i> <i>T. secedens.</i>
				Muscidæ	<i>Glossina caliginea.</i> <i>G. palpalis.</i>
				Culicidæ	<i>Ingramia malfeyti.</i> <i>Mansonoides uniformis.</i>
Aro ...	...	Dr. Neale	...	Culicidæ	<i>Pyretophorus costalis.</i> <i>Myzomyia funesta.</i> <i>Mansonia africana.</i> <i>Pectinopalpis fuscus.</i> <i>Stegomyia fasciata.</i> <i>Culex nigricostalis.</i> <i>C. tigripes.</i> <i>C. duttoni.</i>
				Cheironomidæ	<i>Culicoides grahamii.</i>
				Psychodidæ	<i>Phlebotomus.</i>
				Simuliidæ	<i>Simulium damnosum.</i>
				Hippoboscidæ	<i>Hippobosca maculata.</i>
				Tabanidæ	<i>Chrysops longicornis.</i> <i>Tabanus fasciatus.</i> <i>T. taeniola.</i> <i>Hæmatopota lacessens.</i>
				Muscidæ	<i>Stomoxys nigra.</i> <i>S. calcitrans.</i> <i>Glossina palpalis.</i> <i>G. fusca.</i> <i>G. longipalpis.</i>

## REPORTS ON BLOOD-SUCKING FLIES—continued.

STATION.	COLLECTOR.	FAMILY.	
Ikorobo ...	Dr. Neale ...	Muscidæ	<i>Glossina tachinoides</i> . <i>G. palpalis</i> . <i>G. caliginea</i> . <i>G. pallicera</i> .
Owerri ...	Dr. E. L. Seiger ...	Tabanidæ	<i>Tabanus socialis</i> .
		Ixodidæ	<i>Hæmaphysalis leachi</i> .
Yaba ...	Dr. Scott Macfie ...	Culicidæ	<i>Anopheles mauritianus</i> . <i>A. pharoensis</i> . <i>Culex tigripes</i> . <i>Mansonoides uniformis</i> . <i>Stegomyia apicoargentea</i> . <i>Culex duttoni</i> . <i>C. thalassius</i> . <i>Ochlerotatus domesticus</i> . <i>O. irritans</i> . <i>O. nigricephalus</i> . <i>Stegomyia fasciata</i> . <i>S. africana</i> . <i>Uranotænia annulata</i> . <i>Mansonoides africanus</i> .
		Tabanidæ	<i>Tabanus socialis</i> . <i>T. fasciatus</i> .
		Muscidæ	<i>Glossina palpalis</i> . <i>Stomoxys nigra</i> . <i>S. omega</i> .
		Cheironomidæ	<i>Culicoides distinctipennis</i> . <i>C. Milnei</i> .
	Dr. Booth ...	Culicidæ	<i>Ceratopogon</i> Sp. prob. new. <i>Anopheles costalis</i> . <i>A. insignis</i> . <i>Culex rima</i> . <i>Culiciomyia nebulosa</i> . <i>Stomoxys nigra</i> . <i>S. omega</i> .
		Muscide	<i>Tabanus thoracinus</i> .
	Dr. Graham and others ...	Tabanidæ	
		Culicidæ	<i>Culex decens</i> . <i>C. consimilis</i> . <i>C. invidiosus</i> . <i>C. grahami</i> . <i>C. pruina</i> . <i>C. quasigelidus</i> . <i>Stegomyia argenteoventralis</i> . <i>Etorleptiomyia mediolineata</i> . <i>Mimomyia mimomyiaformis</i> . <i>M. splendens</i> . <i>Ochlerotatus wellmani</i> .



REPORTS ON BLOOD-SUCKING FLIES—*continued*.

STATION.	COLLECTOR.	FAMILY.	
Yaba—( <i>continued</i> ).		Hippoboscidae	<i>Hippobosca maculata</i> .
		Tabanidae	<i>Tabanus par.</i> Walk.
			<i>T. pluto.</i> Walk.
			<i>T. secedens.</i>
			<i>T. taeniola.</i>
			<i>T. subangustus.</i>
			<i>Chrysops longicornis.</i>
		Muscidae	<i>Glossina pallicera.</i>
			<i>Cordylobia anthropophaga.</i>
			<i>Anopheles costalis.</i>
Warri     ...     ..     Dr. Clark     ...     ...		Culicidae	<i>A. decens.</i>
			<i>Culex duttoni.</i>
			<i>C. invidiosus.</i>
			<i>C. pruina.</i>
			<i>C. tigripes.</i>
			<i>Stegomyia fasciata.</i>
			<i>Chrysops dimidiata.</i>
			<i>C. dimidiata</i> var. <i>silacea.</i>
			<i>Tabanus fasciatus.</i>
			<i>T. secedens.</i>
Ahoada     ...     ...     Mr. Dayrell     ...     ...		Tabanidae	<i>T. socialis.</i>
			<i>Rhinomyza stimulans.</i>
			<i>Chrysops longicornis.</i>
			<i>Stegomyia fasciata.</i>
			<i>Ochlerotatus nigricephalu.</i>
			<i>Culex duttoni.</i>
			<i>Culicomyia nebulosa.</i>
Lagos     ...     ...     Dr. Kapo     ...     ...		Culicidae	



# RETURNS.

## TABLE I.

MEDICAL STAFF ON THE 31<sup>ST</sup> OF DECEMBER, 1913.

Principal Medical Officer	...	...	...	T. Hood.
Deputy Principal Medical Officer	...	...	...	(Vacant).
Senior Sanitary Officer	...	...	...	J. A. Pickels.
Provincial Medical Officer	...	...	...	C. R. Chichester.
" " " "	...	...	...	W. H. G. H. Best.
Senior Medical Officer	...	...	...	W. F. Macfarlane.
" " " "	...	...	...	D. Burrows.
" " " "	...	...	...	J. H. Collier.
Personal Assistant to the Principal Medical Officer	...	...	...	A. E. Horn.
Sanitary Officer	..	...	...	R. Laurie.
Medical Officer	...	...	...	A. W. S. Smythe.
" "	...	...	...	F. J. A. Baldwin.
" "	...	...	...	T. B. Adam.
" "	...	...	...	J. B. Bate.
" "	...	...	...	M. E. O'Dea.
" "	...	...	...	G. Hungerford.
" "	...	...	...	D. A. Ashton.
" "	...	...	...	R. W. Gray.
" "	...	...	...	E. H. Tipper.
" "	...	...	...	J. Currie.
" "	...	...	...	J. C. M. Bailey.
" "	...	...	...	H. R. Ellis.
" "	...	...	...	F. B. Thompson.
" "	...	...	...	J. S. Smith.
" "	...	...	...	D. Mackinnon.
" "	...	...	...	H. L. Burgess.
" "	...	...	...	J. J. Moore.
" "	...	...	...	E. J. Tynan.
" "	...	...	...	H. M. Newport.
" "	...	...	...	A. H. Wilson.
" "	...	...	...	T. M. R. Leonard.
" "	...	...	...	T. R. Beale-Browne.
" "	...	...	...	G. Beatty.
" "	...	...	...	T. L. Craig.
" "	...	...	...	J. H. McKay.
" "	...	...	...	H. R. Morehead.
" "	...	...	...	A. E. Neale.
" "	...	...	...	G. Wilson.
" "	...	...	...	S. L. G. D. MacLaine.
" "	...	...	...	T. H. Suffern.
" "	...	...	...	A. W. H. Grant.
" "	...	...	...	E. M. Franklin.
" "	...	...	...	W. S. Clark.
" "	...	...	...	J. R. P. Allin.
" "	...	...	...	T. Hood-Rankin.
" "	...	...	...	C. W. O'Keeffe.
" "	...	...	...	W. H. Sieger.
" "	...	...	...	W. H. Peacock.



MEDICAL STAFF—*continued.*

Medical Officer	...	...	...	...	R. C. Macpherson.
"	"	...	...	...	A. Hutton.
"	"	...	...	...	G. H. Gallagher.
"	"	...	...	...	F. Ross.
"	"	...	...	...	C. G. Grey.
"	"	...	...	...	J. P. B. Snell.
"	"	...	...	...	L. H. Booth.
"	"	...	...	...	E. L. Sieger.
"	"	...	...	...	R. H. Brierly.
"	"	...	...	...	E. C. Braithwaite.
"	"	...	...	...	H. R. M. Ferguson.
"	"	...	...	...	W. I. Martyn-Clark.
"	"	...	...	...	E. J. Wyler.
"	"	...	...	...	E. J. Quirk.
"	"	...	...	...	K. Manson.
"	"	...	...	...	C. Kelsall.
"	"	...	...	...	E. L. Anderson.
"	"	...	...	...	T. R. Sandeman.
"	"	...	...	...	W. R. Parkinson.
"	"	...	...	...	F. M. P. Rice.
"	"	...	...	...	W. W. Grieve.
"	"	...	...	...	D. T. Birt.
"	"	...	...	...	H. North.
"	"	...	...	...	W. E. Glover.
"	"	...	...	...	H. H. Stewart.
Native Medical Officer	...	...	...	...	O. Sapara.
"	"	"	...	...	W. A. Cole.

## EUROPEAN NURSING STAFF ON THE 31ST OF DECEMBER, 1913.

Senior Nurse	...	...	...	...	M. M. Graham.
"	"	...	...	...	J. Grewer.
Nurse	...	...	...	...	E. K. Neville.
"	...	...	...	...	J. McCotter.
"	...	...	...	...	L. Single.
"	...	...	...	...	J. Y. Matthews.
"	...	...	...	...	E. C. Robinson.
"	...	...	...	...	E. Elliott.
"	...	...	...	...	E. M. Phillips.
"	...	...	...	...	D. Sturgess.
"	...	...	...	...	R. M. Burns.
"	...	...	...	...	N. Seaton.
"	...	...	...	...	E. Daykin.
"	...	...	...	...	L. C. Benedict.
"	...	...	...	...	G. Mackenzie.

## EUROPEAN SANITARY INSPECTORS.

Sanitary Inspector	...	...	...	C. Davies.
"	"	...	...	F. G. Payne.
"	"	...	...	E. Kirk.

## PRINCIPAL MEMBERS OF SUBORDINATE STAFF.

### PRINCIPAL MEDICAL OFFICER'S OFFICE.

First Class Clerk	...	...	..	...	G. Taylor.
"	"	"	...	...	A. J. Salvador.
Second	"	"	...	...	J. R. Dodoo.
"	"	"	...	...	G. J. Rufino.
"	"	"	...	...	F. S. J. Joaquim.
"	"	"	...	...	O. K. Disu.
"	"	"	...	...	A. A. Mayne.
Third	"	"	...	..	P. A. Munis.
"	"	"	...	...	B. F. Ajanaku.
"	"	"	...	...	J. I. Beckley.
Messengers	...	...	...	...	Two.

### VITAL STATISTICS BRANCH.

Registrar of Vital Statistics	...	...	E. J. Martins.
Second Class Clerk	...	...	

### SENIOR SANITARY OFFICER'S OFFICE.

First Class Clerk	...	...	...	E. B. Beckley.
Second	"	"	...	E. L. Williams.
Messenger	...	...	...	One.

## WESTERN PROVINCE.

### SENIOR MEDICAL OFFICER'S OFFICE.

Second Class Clerk	...	...	...	J. F. Fakolujo.
Messenger	...	...	...	One.

### DISPENSING STAFF.

Chief Dispenser	...	...	...	A. E. Phillips.
First Class Dispenser	...	...	...	R. A. Benjamin.
"	"	"	...	T. E. Macaulay.
"	"	"	...	S. A. Doherty.
"	"	"	...	Solomon Phillips.
"	"	"	...	E. C. Adigun.
"	"	"	...	V. E. Campbell.
Second Class Dispensers	...	...	...	Six.
				Two vacancies.
Dispensers-in-training	...	...	...	Ten.

### NURSING STAFF.

First Class Nurses	...	...	...	Sixteen.
Second	"	"	...	Seventeen.
				Three vacancies (One lent to Illorin).
Nurses-in-training	...	...	...	Six.

### LAGOS MEDICAL STORE.

Storekeeper and Warden	...	...	...	S. O. Ohekeno.
Storekeeper	...	...	...	One.

### YABA LUNATIC ASYLUM.

Senior Attendant	...	...	...	One.
Junior Attendants	...	...	..	Eleven.



## CENTRAL PROVINCE.

## PROVINCIAL MEDICAL OFFICER'S OFFICE.

First Class Clerk	...	...	...	G. S. Blankson.
Second „ „	...	...	...	O. F. Morgan
Third „ „	...	...	...	One.
Messenger „	...	...	...	One.

## MEDICAL OFFICER'S OFFICE, WARRI.

Second Class Clerk...	...	...	...	J. E. Tomlinson.
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## DISPENSING STAFF.

First Class Dispenser	...	...	...	W. Sanniez.
„ „ „	...	...	...	G. S. W. Gbedemah.
Second Class Dispensers	...	...	...	Eleven, and one vacancy.
Storekeeper	...	...	...	One.

## NURSING STAFF.

First Class Nurses	...	...	...	Two.
Second Class Nurse	...	...	...	One.

## INFECTIOUS DISEASES HOSPITAL

Attendants	...	...	...	Three.
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## EASTERN PROVINCE.

## PROVINCIAL MEDICAL OFFICER'S OFFICE.

First Class Clerk	...	...	...	A. E. Parker.
Second „ „	...	...	...	S. A. Cardoso.
Third „ „	...	...	...	One.
Messengers	...	...	...	Two.

## DISPENSING STAFF.

Senior Dispenser	...	...	...	J. T. C. Robbin.
First Class Dispenser	...	...	...	E. J. Lewis.
„ „ „	...	...	...	A. O. Laborunaja.
Second Class Dispensers	...	...	...	Fifteen, and one vacancy.
Storekeepers	...	...	...	Two.

## NURSING STAFF.

First Class Nurses	...	...	...	Six.
Second „ „	...	...	...	Ten.
Nurses-in-training	...	...	...	Four.

## LUNATIC ASYLUM.

Senior Attendant	...	...	...	V. E. Ekpe.
Attendants	...	...	...	Six.

## INFECTIOUS DISEASES HOSPITAL.

Attendants	...	...	...	Three.
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## PRINCIPAL CHANGES.

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### WESTERN PROVINCE.

#### APPOINTMENTS.

Mr. J. K. Adefarasin appointed First Class Nurse, and Mr. J. Dedegbe appointed Second Class Nurse, Infectious Diseases Hospital.

#### TRANSFERS.

Mr. S. A. Cardoso, Storekeeper, Lagos Hospital, to Medical Office, Calabar.

Mr. S. Macaulay, Dispenser, Lagos, to Udi, Central Province.

Mr. S. A. Jones, Dispenser, Lagos Prison, to Bende, Eastern Province.

#### TERMINATION OF APPOINTMENT.

Mr. J. K. Coker, First Class Nurse, Infectious Diseases Hospital.

#### DEATH.

Mr. D. Olufadji, Second Class Nurse.

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### CENTRAL PROVINCE.

#### APPOINTMENT.

Mr. S. J. Palmer appointed Third Class Clerk, Warri.

#### TERMINATION OF APPOINTMENT.

Mr. Anazonwu, Third Class Clerk, Warri.

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### EASTERN PROVINCE.

#### APPOINTMENTS.

Mr. D. Davies appointed Second Class Nurse.

Mr. G. T. Karr appointed Senior Attendant, Lunatic Asylum.

Miss T. Thomas appointed Matron, Lunatic Asylum.

#### TRANSFERS.

Mr. J. R. Dodoo, Second Class Clerk, transferred to Lagos.

#### RESIGNATION.

Mrs. R. M. Barkley, Matron, Lunatic Asylum.

#### DEATHS.

Mr. B. P. Barkley, Senior Attendant, Lunatic Asylum.

Mr. S. E. Front, Second Class Dispenser.



## TABLE II.

### FINANCIAL.

STATEMENTS OF EXPENDITURE IN THE YEAR 1913.  
Under Sub-Heads as compared with the Estimates.

ITEM.	MEDICAL—Head 21.	ESTIMATES.	ACTUAL EXPENDITURE.		
		£	£	s.	d.
	PERSONAL EMOLUMENTS ... .. {	60,985 *S.W. 119	56,519	6	0
54	Outfit allowance to European Nurses ... .. {	96 S.W. 60	168	0	0
55	Outfit allowance to Medical Officers ... ..	96	72	0	0
56	Medical Examination of Officers in England... ..	250	105	0	0
57	Expenses of Doctors and Nurses at School of Tropical Medicine, and fees on engagement of and reserve of Medical Officers in England ... ..	800	880	16	6
58	Contribution to Malaria Committee towards investigation of Malaria ... ..	350	350	0	0
59	Contribution to Advisory, Medical and Sanitary Committee for Tropical Africa ... .. {	50 S.W. 144	193	2	1
60	Maintenance of Lunatics at Kissy Asylum ... ..	250	415	9	6
61	Contribution to Tropical Diseases Bureau ... ..	200	—		
62	Expeditionary equipment ... ..	350	183	10	7
63	Contribution to expenses of Dr. Horn... ..	—	—		
64	Occasional Nurse ... ..	—	—		
65	Clothing, Bedding and Equipment ... ..	1,370	1,159	7	5
66	Washing, European and Native Hospitals ... ..	180	149	7	3
67	Diets, Provisions and Necessaries ... .. {	4,300 S.W. 960	4,814	18	9
68	Extra Medical Assistance ... ..	—	—		
69	Medicines ... ..	3,950	3,003	9	11
70	Disinfectants ... ..	100	74	14	5
71	Fuel, Light and Sundries ... .. {	145 S.W. 15	157	8	4
72	Surgical Instruments and Appliances ... ..	1,780	1,481	12	0
73	Upkeep of Medical Libraries ... ..	70	37	7	9
74	Electric Lighting ... ..	—	—		
75	Vaccination Expenses ... ..	1,300	946	8	6
76	Vaccination Fees ... ..	S.W. 991	945	12	0
77	Bonuses to persons Vaccinating ... ..	—	—		
78	Upkeep and Equipment, new I. D. Hospital ... ..	150	134	3	6
79	Parasitological Work ... ..	—	—		
80	Laboratory Equipment and Upkeep ... ..	—	—		
81	Registers for Vital Statistics ... ..	60	33	9	10
82	Medical Comforts ... ..	270	221	11	9
83	Allowance for Uniforms to Native Nurses and Asylum Attendants ... ..	75	43	9	11
84	Uniforms for Staff ... ..	100	94	9	9
85	Expenses of Leper Settlement, Onitsha ... ..	300	299	10	2
86	Hammocks for Medical Stations ... ..	—	—		
87	Transport of Stores ... ..	—	—		
88	Diet and Provisions, Forcados Sanitary Station ... ..	—	—		
89	Night allowance to Hospital Labourers ... ..	14	13	13	3
90	Horse, Rickshaw, Hammock and Bicycle Allowances ... ..	1,228	1,063	6	5
91	Upkeep of Motor Car ... ..	75	74	4	0
92	Typewriters ... ..	105	93	15	11
93	Travelling allowances ... .. {	800 S.W. 90	851	6	10
94	Bush allowances ... .. {	400 S.W. 83	450	5	0
95	X Ray Apparatus ... ..	150	12	5	9
96	Contingencies and Petty Office Expenses ... ..	50	41	14	6
97	Record of Vital Statistics of Europeans ... ..	18	13	19	7
98	Yellow Fever Investigation in West Africa ... ..	S.W. 1,746	1,123	7	7
99	Donation London School of Tropical Medicine ... ..	—	400	0	0
	TOTAL ... ..	£80,417	£76,622	4	9
	S.Ws. ... ..	4,208	—		

### RECEIPTS.—HEAD 4.

Hospital Fees and Receipts ... .. £3,396 18 10

\* Special Warrant.

TABLE III.

RETURN OF STATISTICS OF POPULATION FOR THE YEAR 1913.

		Europeans and Whites.	Africans.	East Indians.	Mixed and Coloured.	Remarks.
Number of inhabitants in 1912 ...		1,805	8,248,536	99	487	Figures taken from Annual Report 1912 and Census of 1911.
"	" births during the year 1913...	—	—	—	—	Not known.
"	" deaths "	—	—	—	—	" "
"	" immigrants "	—	—	—	—	" "
"	" emigrants "	—	—	—	—	" "
"	" inhabitants in 1913 ...	1,800	7,891,000	99	487	Figures for Europeans and Africans supplied by Intelligence Department. " " East Indians, Mixed and Coloured from Census, 1911.
Increase of ...		—	—	—	—	
Decrease of ...		5	357,536	—	—	Increase of 35,251 on Census of 1911 owing to opening of new territory.



## TABLE IV.

ROUTINE SANITARY WORK DONE DURING THE YEAR  
IN THE TOWNS.

## AREAS.

	1911.		1912.		1913.	
	AREA.	Open Spaces.	AREA.	Open Spaces.	AREA.	Open Spaces.
	Acres.		Acres.		Acres.	
Lagos ... ..	1,152	3	1,152	3	1,152	3
Aro ... ..	320	...	320	...	320	...
Ibadan I. ... ..	2,400	...	2,400	...	2,400	...
Ibadan II. ... ..	...	...	...	...	...	...
Oshogbo ... ..	...	...	...	...	...	...
Epe ... ..	640	...	640	...	640	...
Badagry ... ..	...	...	500	...	500	...
Warri ... ..	800	...	800	...	800	...
Forcados ... ..	250	1	250	1	250	1
Sapele ... ..	570	1	570	1	570	1
Onitsha ... ..	1,500	...	1,500	...	1,500	...
Benin City ... ..	3,630	...	3,480	2	3,480	2
Asaba ... ..	...	...	300	...	300	1
Aboh ... ..	640	...	640	...	640	...
Agbor ... ..	380	...	94	...	94	...
Awka ... ..	...	...	640	...	640	...
Okwoga ... ..	820	...	1,620	...	1,620	...
Udi ... ..	2,560	...	2,560	...	2,560	...
Idah ... ..	...	...	100	...	150	...
Calabar ... ..	...	...	...	...	20	...
Bonny ... ..	960	3	960	3	960	3
Opobo ... ..	640	...	640	...	960	...
Degema ... ..	...	...	155	...	640	...
Brass ... ..	...	...	...	...	70	...
Abakaliki ... ..	320	...	320	...	320	...
Afikpo ... ..	...	...	52	...	960	...
Bende ... ..	...	...	...	...	55	...
Eket ... ..	...	...	74	...	74	...
Ikom ... ..	...	...	...	...	240	...
Ikot Ekpene ... ..	125	...	124	...	124	...
Itu ... ..	...	...	...	...	...	...
Obudu ... ..	...	...	640	...	70	...
Ogoja ... ..	640	...	640	...	640	...
Okigwi ... ..	960	...	960	...	960	...
Owerri ... ..	...	...	1,920	...	1,920	1
WESTERN PROVINCE ...	...	3	28,600 sq. miles	3	28,600 sq. miles	3
CENTRAL PROVINCE ...	...	2	22,670 sq. miles	4	22,670 sq. miles	4
EASTERN PROVINCE ...	...	3	28,610 sq. miles	5	28,610 sq. miles	4
SOUTHERN NIGERIA	...	8	79,880 sq. miles	12	79,880 sq. miles	11

TABLE IV.—*continued.*

## POPULATION.

	1911.			1912.			1913.		
	Natives.	Euro- peans.	TOTAL.	Natives.	Euro- peans.	TOTAL.	Natives.	Euro- peans.	TOTAL.
Lagos ... ..	73,158	608	73,766	80,500	585	81,085	75,616	694	76,310
Aro ... ..	390	18	408	...	23	...	560	21	581
Ibadan I. ... ..	3,000	59	3,059	...	...	...	...	...	...
Ibadan II. ... ..	268,000	55	268,055	175,000	42	175,042	180,881	76	180,957
Oshogbo ... ..	...	...	...	...	...	...	61,831	21	61,852
Epe ... ..	8,196	21	8,217	8,728	3	8,731	8,470	3	8,473
Badagry ... ..	...	...	...	11,000	18	11,018	7,249	9	7,258
Warri ... ..	2,449	84	2,533	2,449	64	2,513	2,652	73	2,725
Forcados ... ..	41	...	...	2,743	35	2,778	3,296	42	3,338
Sapele ... ..	1,000	23	1,023	2,000	31	2,031	2,177	54	2,231
Onitsha ... ..	10,000	54	10,054	12,000	58	12,058	12,720	60	12,780
Benin City... ..	10,359	10	10,369	10,799	10	10,809	10,790	10	10,800
Asaba ... ..	...	...	...	...	...	...	28,765	10	28,775
Aboh ... ..	1,030	25	1,055	21,500	9	21,509	1,064	2	1,066
Agbor ... ..	8,405	6	8,411	1,550	5	1,555	8,687	6	8,693
Awka ... ..	...	...	...	10,080	3	10,083	7,648	4	7,652
Okwoga ... ..	4,130	6	4,136	379	4	383	4,267	6	4,273
Udi ... ..	9,297	9	9,306	550	7	557	9,610	7	9,617
Idah ... ..	...	...	...	1,500	5	1,505	3,160	7	3,167
Calabar ... ..	14,263	150	14,413	16,720	148	16,868	14,741	148	14,889
Bonny ... ..	3,000	28	3,028	3,000	52	3,052	2,861	50	2,911
Opobo ... ..	1,064	58	1,122	1,300	57	1,357	17,958	75	18,033
Degema and Abonema ... ..	...	40	...	400	40	440	4,299	27	4,336
Brass ... ..	...	17	...	...	18	...	1,333	18	1,351
Abakaliki ... ..	176	5	181	182	3	185	5,891	2	5,893
Afikpo ... ..	15,552	9	15,561	...	14	...	16,074	17	16,091
Bende ... ..	6,590	3	6,593	...	5	...	6,810	34	6,844
Eket ... ..	...	...	...	600	7	607	605	4	609
Ikom ... ..	4,000	2	4,002	...	9	...	3,169	9	3,178
Ikot Ekpene ... ..	1,551	8	1,559	635	5	640	1,602	7	1,609
Itu ... ..	...	...	...	...	...	...	30,000	21	30,021
Obudu ... ..	...	...	...	3,000	7	3,007	2,321	7	2,328
Ogoja ... ..	1,550	11	1,561	447	11	458	1,601	5	1,605
Okigwi ... ..	2,363	7	2,570	587	6	593	2,648	42	2,690
Owerri ... ..	9,777	16	9,793	...	8	...	10,104	18	10,122
WESTERN PROVINCE ... ..	...	862	2,152,848	...	671	2,187,341	...	824	223,796
CENTRAL PROVINCE ... ..	...	906	2,408,594	...	234	2,447,791	...	281	2,488,857
EASTERN PROVINCE ... ..	...	586	3,297,247	...	390	3,351,545	...	484	3,407,404
SOUTHERN NIGERIA ... ..	...	2,354	7,858,689	...	1,295	7,986,677	...	1,589	8,119,787



TABLE IV.—*continued.*

## HOUSING.

	1911.				1912.				1913.			
	HOUSES.		HUTS.		HOUSES.		HUTS.		HOUSES.		HUTS.	
	E.	N.	E.	N.	E.	N.	E.	N.	E.	N.	E.	N.
Lagos ... ..	205	10,742	...	...	233	...	...	10,742	206	...	...	10,742
Aro ... ..	9	51	1	8	9	60	...	11	9	64	1	...
Ibadan I. ... ..	33	26	...	...	33	26	...	...	36	35	...	...
Ibadan II. ... ..	19	60,000	...	...	22	...	...	60,000	...	...	...	...
Oshogbo ... ..	...	...	...	...	12	...	...	...	12	...	...	...
Epe ... ..	3	...	...	...	3	...	...	...	3	...	...	...
Badagry ... ..	...	...	...	...	11	6	...	...	5	4	...	500
Warri ... ..	19	55	...	...	30	87	...	95	30	...	...	93
Forcados ... ..	13	102	...	66	17	560	...	405	19	600	...	420
Sapele ... ..	11	17	...	211	11	17	...	217	14	23	...	241
Onit ha ... ..	32	97	...	1,512	34	250	...	1,400	34	250	...	1,400
Benin City ... ..	5	6	...	1,025	8	15	...	1,051	8	15	...	7,450
Asaba ... ..	...	...	...	...	4	1	...	5,000	4	7	...	5,900
Aboh ... ..	9	6	...	53	3	19	...	85	2	19	...	87
Agbor ... ..	5	13	...	5,715	5	16	...	575	5	16	...	605
Awka ... ..	...	...	...	...	3	...	...	...	4	...	...	...
Okwoga ... ..	6	...	...	152	4	1	...	197	6	1	...	194
Udi ... ..	8	9	...	175	8	9	...	175	8	9	...	175
Idah ... ..	...	...	...	...	4	...	...	...	4	...	...	...
Calabar ... ..	...	...	...	...	64	44	...	2,046	64	...	...	2,043
Bonny ... ..	8	326	...	74	8	326	...	74	8	326	...	70
Opobo ... ..	12	21	...	96	13	32	...	117	14	44	...	128
Degema ... ..	15	12	...	...	4	114	...	10	6	34	...	94
Brass ... ..	7	...	...	...	8	...	...	...	8	...	...	...
Abakaliki ... ..	3	10	...	25	4	10	...	31	4	10	...	86
Afikpo ... ..	...	...	...	...	5	51	...	...	5	...	...	...
Bende ... ..	...	...	...	...	4	...	...	...	4	...	...	...
Eket ... ..	...	...	...	...	2	...	...	64	8	...	...	64
Ikom ... ..	...	...	...	...	2	24	...	...	6	210	...	...
Ikot Ekpene ... ..	4	11	...	120	1	...	...	...	5	6	...	117
Itu ... ..	...	...	...	...	...	...	...	...	11	...	...	...
Obudu ... ..	...	...	...	...	...	...	10	...	9	...	...	180
Ogoja ... ..	4	...	...	151	...	...	...	169	...	...	7	163
Okigwi ... ..	...	...	7	159	...	...	...	147	7	...	...	166
Owerri ... ..	1	...	4	160	1	...	4	160	...	...	4	...
WESTERN PROVINCE ...	269	77	70,751	...	323	92	...	70,753	271	103	1	11,242
CENTRAL PROVINCE...	108	305	...	8,909	131	975	...	9,200	138	940	...	16,565
EASTERN PROVINCE...	54	380	11	785	116	601	14	2,818	160	630	11	3,111
SOUTHERN NIGERIA...	431	762	70,762	9,694	570	1,668	14	82,771	569	1,673	12	30,918

TABLE IV.—*continued.*

## MOSQUITO PROTECTION OF HOUSES.

	1911.				1912.				1913.			
	Number wholly protect- ed.	With mosq. proof room.	Wholly protected in 1911.	Partially protected in 1911.	Number wholly protect- ed.	With mosq. proof room.	Wholly protected in 1912.	Partially protected in 1912.	Number wholly protect- ed.	With mosq. proof room.	Made wholly protected in 1910.	Partially protected in 1910.
Lagos ... ..	2	48	...	15	22	87	20	39	22	50	5	17
Aro ... ..	...	9	...	..	1	20	1	11	1	21	...	1
Ibadan I. ... ..	2	8	2	2	2	8	...	...	3	12	1	1
Ibadan II. ... ..	5	7	...	...	5	7	...	...	...	...	...	...
Oshogbo ... ..	...	...	...	...	2	1	1	...	5	...	...	...
Epe ... ..	...	3	...	...	...	3	...	...	...	3	...	...
Badagry ... ..	...	...	...	...	...	5	...	...	...	2	...	...
Warri ... ..	...	13	...	6	...	13	...	2	...	13	...	2
Forcados ... ..	1	9	...	5	1	15	...	7	8	2	7	2
Sapele ... ..	3	...	...	...	3	...	...	...	3	..	...	...
Onitsha ... ..	8	5	4	2	9	4	...	1	11	10	2	4
Benin City ... ..	1	1	1	1	1	3	...	3	1	5	...	1
Asaba ... ..	...	...	...	...	...	1	...	...	...	3	...	...
Aboh ... ..	3	6	2	2	2	1	...	...	2	1	...	...
Agbor ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Awka ... ..	...	...	...	...	...	...	...	..	...	...	...	...
Okwoga ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Udi ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Idah ... ..	...	...	...	...	..	...	1	1	1	...	...	...
Calabar ... ..	...	...	...	...	1	4	1	2	1	5	...	2
Bonny ... ..	...	...	...	...	...	...	...	...	...	...	...	..
Opobo ... ..	1	3	...	...	1	2	...	...	2	3	1	...
Degema ... ..	...	3	...	1	...	3	...	1	...	3	...	1
Brass ... ..	...	...	...	...	...	...	...	2	...	...	...	...
Abakaliki ... ..	...	3	...	...	...	2	...	...	...	3	...	1
Afikpo ... ..	...	...	...	...	1	1	...	...	2	1	...	1
Bende ... ..	...	...	...	...	...	3	...	3	...	3	...	...
Eket ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Ikom ... ..	...	1	...	1	1	..	1	...	1	...	...	...
Ikot Ekpene ... ..	1	...	...	...	...	...	...	...	...	1	...	...
Itu ... ..	...	...	...	...	...	...	...	...	...	3	...	2
Obudu ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Ogoja ... ..	...	...	..	...	...	...	...	...	...	...	...	...
Okigwi ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Owerri ... ..	...	...	...	...	...	...	...	...	...	...	...	...
WESTERN PROVINCE ...	9	75	2	17	32	131	22	50	2	44	...	6
CENTRAL PROVINCE ...	16	34	7	16	16	37	1	14	7	16	2	7
EASTERN PROVINCE ...	2	10	...	2	4	15	2	8	1	3	...	1
SOUTHERN NIGERIA	27	119	9	35	52	183	25	72	63	144	16	34



TABLE IV.—*continued.*

## ERECTION OF NEW BUILDINGS DURING THE YEAR.

	1911.					1912.					1913.				
	Public bldgs. with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction.	Public bldgs. with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction.	Public bldgs. with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction.
Lagos ... ..	...	...	...	132	...	...	113	290	...	...	...	163	415	...	...
Aro ... ..	...	...	2	...	...	...	1	...	...	1	2	2	7	...	...
Ibadan I. ... ..	...	2	...	...	...	1	...	11	...	...	...	...	4	...	...
Ibadan II. ... ..	2	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Oshogbo ... ..	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Epe ... ..	...	3	...	...	...	2	...	...	...	...	...	...	...	...	...
Badagry ... ..	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Warri ... ..	7	24	...	...	...	9	16	2	2	2	1	...	2	...	...
Forcados ... ..	4	34	2	...	...	3	24	24	24	...	...	135	15	...	...
Sapele ... ..	2	6	44	...	...	2	...	19	...	...	2	2	30	...	...
Onitsha ... ..	1	15	107	...	...	...	24	...	...	...	2	29	...	...	...
Benin City ... ..	...	...	25	...	...	...	2	28	...	7	...	1	87	20	25
Asaba ... ..	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Aboh ... ..	...	...	211	...	...	1	...	2	...	...	...	...	2	...	...
Agbor ... ..	...	1	...	...	...	1	4	15	...	53	...	...	30	...	...
Awka ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Okwoga ... ..	...	...	...	...	...	1	3	...	...	...	...	2	...	...	...
Udi ... ..	...	1	5	...	...	...	...	...	...	...	...	...	2	...	...
Idah ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Calabar ... ..	...	...	...	...	...	2	2	1	7	16	1	1	...	2	...
Bonny ... ..	1	3	5	...	...	1	1	...	...	...	...	1	3	...	...
Opobo ... ..	5	12	35	...	...	3	2	15	11	6	4	4	3	...	...
Degema ... ..	5	12	35	...	...	1	12	10	3	...	1	8	22	1	3
Brass ... ..	...	1	...	2	...	...	1	2	1	...	...	1	...	...	...
Abakaliki ... ..	1	20	25	...	...	2	1	7	...	...	4	...	55	...	...
Afikpo ... ..	...	...	...	...	...	...	12	...	...	...	...	...	7	...	...
Bende ... ..	...	...	...	...	...	...	2	...	...	...	3	1	...	...	...
Eket ... ..	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...
Ik om ... ..	...	2	5	...	10	...	...	...	...	...	...	...	...	...	...
Ikot Ekpene ... ..	...	...	2	...	...	2	2	30	...	...	2	9	15	...	...
Itu ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Obudu ... ..	...	...	...	...	...	...	...	5	...	...	...	...	8	...	...
Ogoja ... ..	...	...	...	...	...	...	...	42	...	69	...	...	...	75	...
Okigwi ... ..	...	...	20	...	...	2	...	28	...	...	...	...	26	...	...
Owerri ... ..	...	...	...	...	...	...	...	5	...	...	1	...	...	...	...
WESTERN PROVINCE ...	2	5	2	132	...	3	115	302	1	1	2	165	426	...	...
CENTRAL PROVINCE ...	14	81	394	...	...	17	73	90	27	62	5	169	168	20	25
EASTERN PROVINCE ...	12	50	127	2	10	13	35	149	22	91	16	25	139	78	3
SOUTHERN NIGERIA	28	136	523	134	10	33	223	541	50	154	23	359	733	98	28

TABLE IV.—*continued.*

## ACTION TAKEN.

	1911.				1912.				1913.			
	NUMBER OF PROSECUTIONS.		NUMBER DEMOLISHED.		NUMBER OF PROSECUTIONS.		NUMBER DEMOLISHED.		NUMBER OF PROSECUTIONS.		NUMBER DEMOLISHED.	
	Huts.	Houses.	Huts.	Houses.	Huts.	Houses.	Huts.	Houses.	Huts.	Houses.	Huts.	Houses.
Lagos ... ..	...	...	...	136	...	...	...	206	...	...	...	200
Aro ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Ibadan I. ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Ibadan II. ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Oshogbo ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Epe ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Badagry ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Warri ... ..	...	...	...	...	...	...	10	...	...	...	2	...
Forcados ... ..	...	...	...	1	...	...	110	...	...	...	12	...
Sapele ... ..	27	...	38	...	...	...	13	...	13	...	6	...
Onitsha ... ..	...	...	...	...	...	...	...	...	99	...	...	...
Benin City ... ..	...	...	45	...	9	...	9	...	...	...	...	...
Asaba ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Aboh ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Agbor ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Awka ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Okwoga ... ..	...	...	...	...	...	...	6	...	...	...	3	...
Udi ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Idah ... ..	...	...	...	...	...	...	...	...	...	...	4	...
Calabar ... ..	...	...	Aro Lines.	...	...	...	4	1	...	...	...	...
Bonny ... ..	...	...	6	...	...	...	...	...	...	...	4	...
Opobo ... ..	...	...	...	...	...	...	4	...	...	...	1	...
Degema ... ..	...	...	...	...	...	...	32	...	...	...	11	4
Brass ... ..	...	...	3	...	...	...	5	...	...	...	...	1
Abakaliki ... ..	...	...	19	7	...	...	1	2	...	...	31	...
Afikpo ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Bende .. ...	...	...	...	...	...	...	...	...	...	...	...	...
Eket ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Ikom ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Ikot Ekpene ... ..	...	...	1	1	...	...	30	...	...	...	6	2
Itu ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Obudu ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Ogoja ... ..	...	...	...	...	...	...	84	...	...	...	...	...
Okigwi ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Owerri ... ..	...	...	...	...	...	...	48	4	41	...	...	...
WESTERN PROVINCE ... ..	...	...	...	136	...	...	...	206	...	...	...	...
CENTRAL PROVINCE ... ..	27	...	83	1	9	...	148	...	112	...	27	...
EASTERN PROVINCE ... ..	...	...	29 Aro Lines.	8	...	...	208	7	41	...	53	7
SOUTHERN NIGERIA ... ..	27	...	...	145	9	...	356	213	153	...	80	7



TABLE IV —*continued.*

## MARKETS.

	1911.			1912.			1913.		
	Number.	Paved and drained.	Unpaved.	Number.	Paved and drained.	Unpaved	Number.	Paved and drained.	Unpaved.
Lagos ... ..	10	4	6	10	4	6	10	4	6
Aro ... ..	...	...	...	...	...	...	...	...	...
Ibadan I. ... ..	1	...	1	1	...	1	1	...	1
Ibadan II. ... ..	20	...	20	16	...	16	...	...	...
Oshogbo ... ..	...	...	...	1	...	1	1	...	1
Epe ... ..	1	...	1	2	...	2	2	...	2
Badagry ... ..	...	...	...	1	...	1	2	...	2
Warri ... ..	1	...	1	1	...	1	1	...	1
Forcados ... ..	1	...	1	1	...	1	1	...	1
Sapele ... ..	1	...	1	1	...	1	1	...	1
Onitsha ... ..	2	...	2	1	...	1	2	...	2
Benin City ... ..	2	...	2	2	...	2	2	...	2
Asaba ... ..	...	...	...	5	...	5	6	...	6
Aboh ... ..	9	...	9	...	...	..	...	...	...
Agbor ... ..	1	...	1	1	...	1	1	...	1
Awka ... ..	...	...	...	4	...	4	4	...	4
Okwoga ... ..	...	...	...	...	...	...	1	...	1
Udi ... ..	1	...	1	...	...	...	...	...	...
Idah ... ..	...	...	...	1	...	1	1	...	1
Calabar ... ..	3	...	3	3	...	3	3	...	3
Bonny ... ..	1	...	1	1	...	1	1	...	1
Opobo ... ..	1	...	1	1	...	1	1	...	1
Degema ... ..	1	...	1	4	...	4	1	...	1
Brass ... ..	...	...	...	...	...	...	...	...	...
Abakaliki ... ..	15	...	15	...	...	...	15	...	15
Afikpo ... ..	...	...	...	4	...	4	4	...	4
Bende ... ..	...	...	...	1	...	1	...	...	...
Eket ... ..	...	...	...	1	...	1	1	...	1
Ikom ... ..	...	...	...	7	...	7	9	...	9
Ikot Ekpene ... ..	1	...	1	1	...	1	7	...	7
Itu ... ..	...	...	...	...	...	...	1	...	1
Obudu ... ..	...	...	...	1	...	1	7	...	7
Ogoja ... ..	...	...	...	...	...	...	1	...	1
Okigwi ... ..	...	...	...	...	...	...	...	...	...
Owerri ... ..	1	...	1	1	1	1	1	...	1
WESTERN PROVINCE ... ..	32	4	28	31	4	27	16	4	12
CENTRAL PROVINCE ... ..	18	...	18	17	...	17	20	...	20
EASTERN PROVINCE ... ..	23	...	23	25	1	25	52	...	52
SOUTHERN NIGERIA ... ..	73	4	69	73	5	69	88	4	84

TABLE IV.—*continued.*

## SLAUGHTER HOUSES.

	1911.			1912.			1913.		
	Number.	Paved and drained.	Un-paved.	Number.	Paved and drained.	Un-paved.	Number.	Paved and drained.	Un-paved.
Lagos ... ..	2	2	...	2	2	...	2	2	...
Aro ... ..	...	...	...	...	...	...	...	...	...
Ibadan I. ... ..	...	...	...	...	...	...	...	...	...
Ibadan II. ... ..	...	...	...	1	1	...	...	...	...
Oshogbo ... ..	...	...	...	...	...	...	...	...	...
Epe ... ..	1	1	...	1	1	...	1	1	...
Badagry ... ..	...	...	...	1	1	...	1	1	...
Warri ... ..	1	1	...	1	1	...	1	1	...
Forcados ... ..	...	...	...	...	...	...	...	...	...
Sapele ... ..	...	...	...	...	...	...	...	...	...
Onitsha ... ..	1	1	...	1	1	...	1	1	...
Benin City ... ..	...	...	...	...	...	...	1	1	...
Asaba ... ..	...	...	...	...	...	...	...	...	...
Aboh ... ..	...	...	...	...	...	...	...	...	...
Agbor ... ..	...	...	...	...	...	...	...	...	...
Awka ... ..	...	...	...	...	...	...	...	...	...
Okwoga ... ..	...	...	...	...	...	...	...	...	...
Udi ... ..	...	...	...	1	...	1	...	...	...
Idah ... ..	...	...	...	1	1	...	1	1	...
Calabar ... ..	1	1	...	1	1	...	1	1	...
Bonny ... ..	...	...	...	...	...	...	...	...	...
Opobo ... ..	...	...	...	...	...	...	...	...	...
Degema ... ..	...	...	...	...	...	...	...	...	...
Brass ... ..	...	...	...	...	...	...	...	...	...
Abakaliki ... ..	...	...	...	...	...	...	1	...	1
Afikpo ... ..	...	...	...	...	...	...	...	...	...
Bende ... ..	...	...	...	...	...	...	...	...	...
Obudu ... ..	...	...	...	...	...	...	...	...	...
Ogoja ... ..	...	...	...	...	...	...	...	...	...
Eket ... ..	...	...	...	...	...	...	...	...	...
Ikom ... ..	...	...	...	...	...	...	...	...	...
Ikot Ekpene ... ..	...	...	...	...	...	...	...	...	...
Itu ... ..	...	...	...	...	...	...	...	...	...
Okigwi ... ..	...	...	...	...	...	...	...	...	...
Owerri ... ..	...	...	...	...	...	...	...	...	...
WESTERN PROVINCE ...	3	3	...	5	5	...	4	4	...
CENTRAL PROVINCE... ..	2	2	...	4	3	1	4	4	...
EASTERN PROVINCE... ..	1	1	...	1	1	...	2	1	1
SOUTHERN NIGERIA...	6	6	...	10	9	1	10	9	1





TABLE IV.—continued.

## LATRINES (PRIVATE).

	1911.								1912.								1913.											
	Number.	Pails removed daily.	Number of clean pails substituted for dirty ones.	Number of night soil men	Cesspools.	Cesspools cleansed.	New cesspools.	Cesspools abolished.	Cesspools regularly oiled.	Number.	Pails removed daily.	Number of clean pails substituted for dirty ones.	Number of night soil men.	Cesspools.	Cesspools cleansed.	New cesspools.	Cesspools abolished.	Cesspools regularly oiled.	Number.	Pails removed daily.	Number of clean pails substituted for dirty ones.	Number of night soil men.	Cesspools.	Cesspools cleansed.	New cesspools.	Cesspools abolished.	Cesspools regularly oiled.	
Lagos	...	900	900	150	...	...	...	...	...	...	950	950	150	...	...	...	...	...	...	...	950	950	150	...	...	...	...	...
Aro	121	21	21	2	...	...	...	...	...	...	27	27	3	...	...	...	...	...	...	...	27	27	3	...	...	...	...	...
Ibadan I.	40	74	74	10	1	1	...	...	...	...	106	106	22	1	...	...	...	...	...	...	114	114	16	...	...	...	...	...
Ibadan II.	37	37	37	14	...	...	...	...	...	...	31	31	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Oshogbo	...	...	...	...	...	...	...	...	...	...	6	6	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Epe	...	8	14	8	...	...	...	...	...	...	16	16	8	...	...	...	...	...	...	...	16	16	8	...	...	...	...	
Badagry	...	...	...	...	...	...	...	...	...	...	16	16	...	2	...	...	...	...	...	...	16	16	6	1	...	...	...	
Warri	75	113	113	34	...	...	...	...	...	...	159	159	42	2	...	...	...	...	...	...	174	174	42	...	...	...	...	
Forcados	35	68	68	13	...	...	...	...	...	...	122	122	13	...	...	...	...	...	...	...	122	122	13	...	...	...	...	
Sapele	49	61	...	12	...	...	...	...	...	...	61	61	4	...	...	...	...	...	...	...	61	61	15	...	...	...	...	
Onitsha	...	145	145	18	...	...	...	...	...	...	188	188	39	...	...	...	...	...	...	...	92	92	39	...	...	...	...	
Benin City	19	19	19	7	many	...	...	...	...	...	43	43	7	200	...	...	...	...	...	...	46	46	12	200	...	45	...	
Asaba	...	...	...	...	...	...	...	...	...	...	16	16	6	...	...	...	...	...	...	...	18	18	6	...	...	...	...	
Aboah	20	20	...	6	...	...	...	...	...	...	27	27	6	...	...	...	...	...	...	...	27	27	6	...	...	...	...	
Agbor	18	2	18	6	20	...	40	40	...	...	18	18	6	20	...	40	40	...	...	...	18	18	20	2	2	18	...	
Awka	...	...	...	...	...	...	...	...	...	...	39	39	6	...	...	...	...	...	...	...	44	44	6	...	...	...	...	
Okwoga	6	6	6	...	...	...	...	...	...	...	4	4	8	...	...	...	...	...	...	...	12	12	8	...	...	...	...	
Udi	5	5	5	10	...	...	...	...	...	...	28	28	10	4	...	4	4	...	...	...	5	5	10	...	...	...	...	
Idah	...	...	...	...	...	...	...	...	...	...	13	13	6	...	...	...	...	...	...	...	8	8	6	...	...	...	...	
Catibur	147	435	435	15	102	102	...	2	...	...	741	745	78	110	110	18	10	...	...	...	741	741	78	108	108	...	2	
Bonny	31	47	47	7	1	...	...	1	...	...	48	48	10	1	...	1	1	...	...	...	54	54	6	...	...	...	...	
Opobo	23	43	43	10	...	...	...	...	...	...	59	59	10	...	...	...	...	...	...	...	68	68	10	...	...	...	...	
Degema	10	16	16	8	...	...	...	...	...	...	20	20	...	...	...	...	...	...	...	...	36	36	9	...	...	...	...	
Brass	28	28	...	...	...	...	...	...	...	...	26	26	12	...	...	...	...	...	...	...	26	26	6	...	...	...	...	
Abakaliki	14	28	28	6	1	1	26	25	1	...	44	44	5	...	...	...	1	...	...	...	52	52	5	...	...	2	...	
Afikpo	...	...	...	...	...	...	...	...	...	...	32	32	8	...	...	...	...	...	...	...	32	32	8	...	...	...	...	
Bende	...	...	...	...	...	...	...	...	...	...	...	...	10	...	...	...	...	...	...	...	16	16	14	...	...	...	...	
Eket	...	...	...	...	...	...	...	...	...	...	30	30	10	...	...	...	...	...	...	...	30	30	10	...	...	...	...	
Ikom	8	12	12	6	...	...	...	...	...	...	38	38	12	...	...	...	...	...	...	...	39	39	18	...	...	...	...	
Ikot Ekpene	24	30	30	14	...	...	...	...	...	...	36	36	14	...	...	...	...	...	...	...	40	40	14	...	...	...	...	
Itu	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14	14	10	...	...	...	...	
Obudu	...	...	...	...	...	...	...	...	...	...	50	50	8	...	...	...	...	...	...	...	13	12	7	...	...	...	...	
Ogoja	7	40	40	10	...	...	...	...	...	...	14	14	42	...	...	...	...	...	...	...	14	14	42	...	...	...	...	
Okigwi	15	55	55	14	4	...	52	52	...	...	60	60	18	...	...	...	...	...	...	...	60	60	16	...	...	...	...	
Owerri	...	...	...	...	...	...	...	...	...	...	108	108	14	...	...	...	...	...	...	...	24	24	12	...	...	...	...	
WESTERN PROVINCE	198	1,040	1,046	184	1	1	...	...	...	152	1,152	1,152	190	3	1	1	...	2	...	138	1,135	1,173	189	1	...	2	1	
CENTRAL PROVINCE	227	439	384	106	20	...	40	40	...	410	718	718	153	226	...	45	44	...	...	450	619	549	183	202	47	70	...	
EASTERN PROVINCE	307	734	706	90	108	103	78	80	1	511	1,306	1,338	219	111	110	19	12	1	...	575	1,258	472	234	108	...	4	...	
SOUTHERN NIGERIA	732	2,213	2,136	380	129	104	118	120	1	1,073	3,176	3,208	562	340	111	65	56	3	...	1,163	3,012	2,194	606	311	47	76	1	



TABLE IV.—continued.

REMOVAL OF REFUSE.

	1911.						1912.						1913.					
	Dust bins.	Carts removing street refuse.	Amount of Refuse.	Carts removing house refuse.	Amount of refuse from yards and premises.	Men employed.	Dust bins.	Carts removing street refuse.	Amount of refuse.	Carts removing house refuse.	Amount of refuse from yards and premises.	Men employed.	Dust bins.	Carts removing street refuse.	Amount of refuse.	Carts removing house refuse.	Amount of refuse from yards and premises.	Men employed.
Lagos	60	20 hand carts	180 tons	...	...	250	63	40	180 tons	...	...	250	63	...	200 tons	...	...	250
Aro ...	...	...	12 brls.	...	12 barrels	2	34 brls.	...	34 barrels	...	...	3	21	...	21	...	...	3
Ibadan I.	...	1	3 cwt.	1	5 cwt.	10	80	4	5 cwt.	1	1 ton	22	12	1	5 cwt.	1	8 cwt.	16
Ibadan II.	...	...	...	...	2 cwt.	10	8	...	...	...	2 cwt.	6	...	...	...	...	...	...
Oshogbo	...	...	...	...	...	...	12	...	...	...	1 barrel	4	1	...	...	...	...	...
Epe ...	11	...	...	...	...	12	11	...	...	...	...	10	11	...	...	...	...	8
Badagry	...	...	...	...	...	...	...	...	...	...	...	14	26	2	10	2	...	9
Warri	54	...	...	...	...	24	63	4	20 cart loads.	2	...	42	45	4	20 ct. lds.	...	...	42
Forcados	150	...	...	...	150 bins	12	99	...	...	...	99	32	104	...	...	...	104 bins	36
Sapele	...	...	10 brls.	...	...	29	16	...	1 ton	...	1 ton	15	16	...	1 ton	...	1 ton	15
Onitsha	...	...	...	...	...	...	28 brls.	...	28 barrels	...	28 barrels	10	28	...	28 brls.	...	28	10
Benin City	22	1	...	2	...	10	29	2	30 barrels	...	22	11	29	...	45 cwt.	...	22 barrels	16
Asaba	...	...	...	...	...	...	...	...	8 pails	...	6	6	...	...	...	6 barrels	6	6
Aboh	9	...	...	...	20 bins	...	19	...	...	...	10 pails	6	21	...	8 pails	...	10 pails	6
Agbor	...	...	...	...	...	...	...	...	...	...	...	...	10	...	1 cwt.	...	...	...
Awka	...	...	...	...	...	...	...	...	...	...	7 barrels	...	...	...	...	...	12 barrels	6
Okwoga	9	...	...	...	...	...	9	...	...	...	...	8	10	...	...	...	10 bins	8
Udi ...	...	...	...	...	...	10	...	...	...	...	...	10	...	...	...	...	...	10
Idah ...	...	...	...	...	...	...	...	...	...	...	11 barrels	6	...	...	...	...	14 barrels	6
Calabar	47	...	...	...	...	34	10	1	4 tons	...	...	75	12	1	4 tons	...	...	75
Bonny	5	...	165 drums	...	...	10	5	4	...	...	...	4	5	4	...	...	...	4
Opobo	26	...	40 c. feet	...	40 c. feet	10	50	...	40 cubic feet	...	40 c. feet	10	130	...	100 c. ft.	...	100 c. feet	16
Degema	91	...	182 drums	...	150 drums	...	46 drums	...	46 drums	...	...	9	96	...	250 c. ft.	23 drums	52 c. feet	18
Brass	58	...	...	...	...	...	61	...	...	...	1 ton	...	55	...	...	...	1 ton	6
Abakaliki	24	...	48 drums	...	48 drums	6	32	...	32 tins	...	32 tins	5	32	...	32	...	32	5
Afikpo	...	...	...	...	...	...	27	...	...	...	...	8	20	...	...	...	18	8
Bende	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14
Eket...	...	...	...	...	...	...	...	...	8 barrels	...	...	...	5	...	...	...	...	...
Ikot and Obubra	...	...	...	...	...	6	...	...	...	...	...	10	...	...	15 brls.	...	...	...
Ikot Ekpene	...	...	...	...	...	14	22	...	...	...	...	24	22	...	20 drums	...	...	18
Itu ...	...	...	...	...	...	...	...	...	...	...	...	8	1	...	...	...	...	8
Obudu	...	...	...	...	...	...	14	...	...	...	...	10	...	...	...	...	12 pails	6
Ogoja	...	...	...	...	...	...	...	...	...	...	...	10	8	...	...	...	...	12
Okigwi	8	...	...	...	...	14	...	...	...	...	...	...	...	...	...	...	...	...
Owerri	...	...	...	...	...	...	...	...	...	...	...	4	...	...	10 pails	...	...	...
WESTERN PROVINCE	77	21	...	1	...	284	174	44	...	1	...	309	134	4	...	...	...	286
CENTRAL PROVINCE	244	1	...	2	...	85	235	6	..	2	...	152	263	4	...	...	...	161
EASTERN PROVINCE	259	...	...	...	...	104	229	5	...	...	...	177	386	5	...	...	...	190
SOUTHERN NIGERIA...	580	22	...	3	...	473	638	55	...	3	...	638	783	13	...	...	...	637





TABLE IV.—*continued.*CARTLOADS, TINS, CANS, &c., REMOVED FROM HOUSES,  
HUTS AND COMPOUNDS.

	1911.	1912.	1913.
Lagos ... ..	...	...	...
Aro ... ..	...	...	...
Ibadan I. ... ..	1	1	1
Ibadan II. ... ..	...	...	...
Oshogbo ... ..	...	...	...
Epe ... ..	...	...	...
Badagry ... ..	...	...	...
Warri ... ..	...	...	...
Forcados ... ..	...	...	...
Sapele ... ..	...	...	...
Onitsha ... ..	...	...	...
Benin City ... ..	...	3,000 Barrows	About 20 Barrowfuls
Asaba ... ..	...	...	...
Aboh ... ..	...	...	...
Agbor ... ..	...	...	...
Awka ... ..	...	...	...
Okwoga ... ..	...	...	...
Udi ... ..	...	...	...
Idah ... ..	...	...	...
Calabar ... ..	...	4 tons	4 tons
Bonny ... ..	...	...	...
Opobo ... ..	68228 Bottles 21860 Tins	10 c. ft.	15 c. ft.
Degema ... ..	...	2	...
Brass ... ..	39029 Bottles, Tins, etc.	...	1 ton
Abakaliki ... ..	...	...	No record
Afikpo ... ..	...	8 pails	8 pails
Bende ... ..	...	...	...
Eket ... ..	...	...	...
Ikom ... ..	1 Barrel	12 Barrels	1 Barrel
Ikot Ekpene ... ..	...	...	...
Itu ... ..	...	...	...
Obudu ... ..	...	...	4 loads
Ogoja ... ..	...	...	...
Okigwi ... ..	...	...	...
Owerri ... ..	...	...	...
WESTERN PROVINCE ... ..	...	...	...
CENTRAL PROVINCE ... ..	...	...	...
EASTERN PROVINCE ... ..	...	...	...
SOUTHERN NIGERIA ... ..	...	...	...

TABLE IV.—continued.  
WATER SUPPLY, 1911.

PIPE-BORNE WATER.				WELLS.				TANKS.										BARRELS.					
Source.	Linear Yards.	Public stand pipes.	Private stand pipes.	PUBLIC.		PRIVATE.		PUBLIC.				PRIVATE.				NATURE.		Number.	M.P.				
				Number.	M.P., &c.	Number.	M.P., &c.	Under ground.	M.P. and pump.	Above ground.	M.P.	400 gallons or less.	Above 400 gallons.	Under ground.	M.P.	Above ground.	M.P.			400 gallons or less.	Above 400 gallons.	Wood.	Iron.
Lagos	3,817	...	19	95	18	2,120	...	...	...	...	...	...	...	1	561	519	514	47	..	475	86	1,365	365
Aro ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	40	40	38	2	...	38	2	...	...
Ibadan I.	3,200	...	16	...	...	6	6	...	...	...	...	...	...	...	58	56	54	4	...	54	4	...	...
Ibadan II.	...	...	...	21	...	...	...	...	...	...	...	...	...	...	28	26	27	1	...	20	8	...	...
Oshogbo	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Epe ...	...	...	...	5	...	...	1	...	...	...	...	...	...	...	18	18	18	...	...	...	5	...	...
Badagry	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Warri	...	...	...	6	6	33	12	...	...	...	...	...	...	7	85	85	6	86	...	74	18	...	...
Forcados	...	...	...	7	7	2	...	...	...	...	...	...	...	...	110	93	38	72	...	85	25	...	129
Sapele	...	...	...	1	1	2	2	...	...	...	...	...	...	...	47	47	21	26	...	38	9	...	...
Onitsha	...	...	...	...	...	...	...	...	...	...	...	...	...	37	6	31	31	...	...	37	20	...	...
Benin City...	...	14	5	...	...	...	...	...	...	...	...	...	...	3	...	...	...	3	...	...	3	...	...
Asaba	...	...	...	...	...	...	...	...	...	...	...	...	...	1	19	19	...	...	...	...	...	...	...
Aboh	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	15	5	...	...
Agbor	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Awka	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Okwoga	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Udi ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Idah	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Calabar	...	...	...	2	...	...	...	1	...	...	...	...	...	...	8	...	...	...	...	10	1	...	...
Bonny	...	4	...	13	10	...	...	...	...	2	...	...	...	...	96	96	79	17	...	88	8	...	8
Opobo	...	...	...	2	...	...	1	...	...	...	...	...	2	...	70	70	...	...	...	107	...	...	...
Degema	...	...	...	3	3	...	1	...	...	37	37	35	2	...	46	46	38	8	...	46	...	...	...
Brass	...	...	...	5	3	5	...	...	...	...	...	...	...	...	41	39	...	...	1	40	...	...	...
Abakaliki	...	...	...	...	...	...	...	...	...	1	1	1	...	...	...	...	...	...	...	...	1	...	...
Afikpo	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bende	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eket	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ikom	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ikot Ekpene	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Itu ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Obudu	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ogoja	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Okigwi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Owerri	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
WESTERN PROVINCE	7,017	...	...	121	18	2,126	7	...	...	...	...	...	...	1	705	659	651	54	...	600	105	1,365	365
CENTRAL PROVINCE	...	14	...	14	14	38	15	...	...	1	1	1	...	48	267	275	96	187	...	249	80	17	129
EASTERN PROVINCE	...	...	...	25	16	9	2	1	...	40	38	36	2	...	261	251	117	25	1	291	10	8	8
SOUTHERN NIGERIA...	7,017	18	...	160	48	2,173	24	1	...	41	39	37	2	49	1,233	1,185	864	266	1	1,140	195	1,390	502



TABLE IV.—continued.  
WATER SUPPLY, 1912.

PIPE-BORNE WATER.				WELLS.				TANKS.										BARRELS.						
				PUBLIC.		PRIVATE.		PUBLIC.				PRIVATE.						NATURE.						
Source.	Linear yards.	Public stand pipes.	Private stand pipes.	Number.	M.P., &c.	Number.	M.P., &c	Under ground.	M.P., and pump.	Above ground.	M.P.	400 gallons or less.	Above 400 gallons.	Under ground.	M.P.	Above ground.	M.P.	400 gallons or less.	Above 400 gallons.	Wood.	Iron.	Cement.	Number.	M.P.
Lagos	4,577	...	28	101	19	2,221	...	...	...	2	2	2	...	1	1	680	634	601	80	2	514	165	1,078	326
Aro ...	...	...	..	...	...	...	...	...	...	...	...	...	...	1	...	51	51	49	2	...	49	2	13	9
Ibadan I. ...	3,600	...	17	1	1	3	3	...	...	...	...	...	...	...	...	80	75	75	3	...	76	4	...	...
Ibadan II. ...	2,000	...	10	22	...	Many	...	...	...	...	...	...	...	...	...	35	33	34	1	...	25	10	...	...
Oshogbo	3,520	2	...	...	...	1	1	...	...	...	...	...	...	...	...	36	30	...	30	...	24	12	...	...
Epe ...	...	...	...	6	2	2	2	...	...	...	...	...	...	...	...	19	19	19	...	...	14	5	...	...
Badagry	...	...	...	7	...	57	...	...	...	...	...	...	...	...	...	12	12	12	...	...	6	6	...	...
Warri	...	...	...	8	8	17	17	...	...	...	...	...	...	7	7	121	121	6	122	...	106	22	...	...
Forcados	...	...	...	7	7	2	...	...	...	...	...	...	...	...	...	148	146	35	113	...	113	35	240	138
Sapele	...	...	...	1	1	2	2	...	...	...	...	...	...	...	...	48	48	22	26	...	39	9	...	...
Onitsha	...	...	...	...	...	...	...	...	...	...	...	...	...	6	6	37	37	...	43	...	...	...	...	...
Benin City ...	11,640	18	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Asaba	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	14	14	...	14	...	12	3	...	...
Aboh	...	...	...	...	...	1	1	...	...	1	1	...	1	...	...	15	15	6	9	...	5	10	...	...
Agbor	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Awka	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	1	...	...
Okwoga	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Udi ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Idah	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	8	1	7	...	4	4	...	...
Calabar	19,802	7	95	...	...	3	...	2	2	4	...	4	...	1	1	10	5	11	...	...	...	...	...	...
Bonny	...	...	...	6	6	9	7	...	...	...	...	...	...	...	...	96	96	62	38	...	88	8	4	4
Opobo	...	...	...	2	2	3	...	...	...	...	...	...	...	...	...	111	47	109	2	...	110	1	2	...
Degema	...	...	...	6	4	...	...	...	...	...	...	...	...	...	...	9	8	4	5	...	9	...	...	...
Brass	...	...	...	6	4	5	...	...	...	...	...	...	...	...	...	35	20	...	...	...	35	...	...	...
Abakaliki	...	...	...	...	...	...	...	...	...	1	1	1	...	...	...	...	...	...	...	...	...	1	...	...
Afikpo	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...
Bende	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eket	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	6	6	...	...	...	6	...	...	...
Ikom	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ikot Ekpene	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Itu ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Obudu	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ogoja	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Okigwi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Owerri	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	2	...	2	...	...	...
WESTERN PROVINCE	...	13,637	2	137	22	2,284	6	...	...	2	2	2	...	2	1	913	854	790	118	2	708	204	1,091	335
CENTRAL PROVINCE	...	11,640	18	17	16	22	20	...	...	1	1	...	2	14	13	392	390	70	335	...	279	84	240	138
EASTERN PROVINCE	...	19,802	7	22	16	20	7	2	2	5	2	5	...	1	1	269	184	192	47	12	250	11	6	4
SOUTHERN NIGERIA...	...	45,079	27	176	54	2,326	33	2	2	8	5	7	2	17	15	1,574	428	1,052	500	14	1,237	299	1,337	477





TABLE IV.—continued.  
DRAINAGE. PUBLIC DRAINS.

1911.										1912.				1913.			
MASONRY DRAINS.										EARTH DRAINS.							
Linear Yards.	Linear Yards recon-struct'd	Linear Yards re-paired.	Linear Yards con-struct'd	Linear Yards.	Linear Yards recon-struct'd	Linear Yards re-paired.	Linear Yards con-struct'd	Linear Yards.	Linear Yards recon-struct'd	Linear Yards cleaned.	Frequency of clearing.	Linear Yards cleaned.	Linear Yards dug.	Frequency of clearing.	Linear Yards cleaned.	Linear Yards dug.	Frequency of clearing.
Lagos	18,320	1,000	...	1,100	30,000	970	...	1,621	30,652	1,300	...	652	...	When required	...	...	When required
Aro	...	...	...	...	...	...	...	...	120	...	...	120	...	...	3,000	1,040	Monthly
Ibadan I.	...	...	...	...	...	...	...	...	...	...	...	...	...	Monthly	20,000	2,000	Quarterly
Ibadan II.	...	...	...	...	130	...	...	130	...	...	...	...	...	...	...	...	...
Oshogbo	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Epe	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Badagry	...	...	...	...	71	...	...	...	...	...	...	82	...	...	...	515	Every 6 weeks
Warri	220	100	...	...	2,004	...	...	1,247	3,184	...	...	1,180	...	...	16,492	...	When required
Forcados	1,324	...	...	...	1,324	...	...	...	1,324	...	...	...	...	Fortnightly	15,500	25,500	Fortnightly
Sapele	750	...	...	...	750	...	...	...	...	...	...	...	...	Monthly	1,200	...	Quarterly
Onitsha	...	...	...	...	2,600	...	200	800	1,028	64	247	...	...	...	...	...	...
Benin City	1,300	...	...	...	1,700	...	...	400	1,760	...	...	60	...	Monthly	3,000	...	Monthly
Asaba	...	...	...	...	143	...	...	...	...	...	...	...	...	Continuously	...	...	Constantly
Aboh	...	...	40	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Agbor	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Awka	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Okwoga	...	...	...	...	...	...	...	...	...	...	...	...	...	Monthly	4,670	...	Fortnightly
Udi	...	...	...	...	...	...	...	...	...	...	...	...	1,760	Annually	1,760	...	Quarterly
Idah	...	...	...	...	...	...	...	...	...	...	...	220	...	...	...	...	...
Calabar	...	...	...	...	13,405	...	...	540	13,705	...	...	300	...	...	1,340	...	Monthly
Bonny	...	...	...	...	1,364	...	6	...	1,649	...	...	285	...	Fortnightly	3,187	35	When required
Opobo	1,748	...	...	...	2,398	...	...	650	2,398	...	...	200	...	Monthly	300	...	Monthly
Degema	1,688	...	...	...	1,700	...	...	...	60	...	...	...	...	Monthly	600	...	Monthly
Brass	200	...	...	...	200	...	...	...	200	...	...	...	...	...	2,500	...	Half yearly
Abakaliki	...	...	...	...	...	...	...	...	...	...	...	...	...	Monthly	2,500	500	Weekly
Afikpo	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,000	...	Weekly
Bende	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eket	...	...	...	...	70	...	30	...	70	...	20	...	...	Quarterly	4,300	...	Monthly
Ikom	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ikot Ekpene	...	...	...	...	640	...	...	140	780	400	...	430	...	Monthly	800	...	Monthly
Itu	...	...	...	...	...	...	...	...	242	...	...	84	...	...	1,000	...	When required
Obudu	...	...	...	...	15	...	...	...	...	...	...	...	...	...	...	...	...
Ogoja	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Okigwi	...	...	...	...	...	...	...	...	...	...	...	...	...	When required	...	...	...
Owerri	...	...	...	...	...	...	...	...	...	...	...	...	...	When required	2,000	...	Monthly
WESTERN PROVINCE	18,320	1,000	...	1,100	30,201	970	32	1,762	30,772	1,300	...	854	176,000	...	...	23,800	...
CENTRAL PROVINCE	3,594	100	40	...	8,521	...	203	2,447	7,296	64	247	1,460	16,094	...	...	43,622	...
EASTERN PROVINCE	3,636	...	...	204	19,712	...	36	1,345	19,104	400	20	1,299	6,390	...	...	19,527	...
SOUTHERN NIGERIA	25,550	1,100	40	1,304	58,514	970	271	5 554	57,172	1,764	267	3,733	198,484	...	...	86,949	...

TABLE IV.—*continued.*

DRAINAGE. PRIVATE DRAINS.

	1911.				1912.				1913.				1911.			1912.			1913.		
	MASONRY DRAINS.				MASONRY DRAINS.				MASONRY DRAINS.				EARTH DRAINS.			EARTH DRAINS.			EARTH DRAINS.		
	Linear yards.	Linear yards re-constructed.	Linear yards re-paired.	Linear yards con-structed.	Linear yards.	Linear yards re-constructed.	Linear yards re-paired.	Linear yards con-structed.	Linear yards.	Linear yards re-constructed.	Linear yards re-paired.	Linear yards con-structed.	Linear yards cleaned.	Linear yards dug.	Frequency of clearing.	Linear yards cleaned.	Linear yards dug.	Frequency of clearing.	Linear yards cleaned.	Linear yards dug.	Frequency of clearing.
Lagos	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Aro	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ibadan I. ...	200	50	...	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ibadan II. ...	100	...	...	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Oshogbo ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Epe ...	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Badagry ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Warri ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Forcados ...	347	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sapele ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Onitsha ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Benin City ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Asaba ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Aboh ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Agbor ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Awka ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Okwoga ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Udi ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Idah ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Calabar ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bonny ...	1,266	...	...	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Opobo ...	3,447	...	...	70	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Degema ...	1,014	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Brass ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Abakaliki ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Afikpo ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bende ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eket ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ikom ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ikot Ekpene ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Itu ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Obudu ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ogoja ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Okigwi ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Owerri ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
WESTERN PROVINCE ...	310	50	...	200	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
CENTRAL PROVINCE ...	347	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
EASTERN PROVINCE ...	5,727	100	...	80	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
SOUTHERN NIGERIA	6,384	150	...	280	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...



TABLE IV.—*continued.*

## CLEARANCE OF UNDERGROWTH, GRASS, WEEDS, &amp;c.

	1911.		1912.		1913.	
	Square yards grass, &c., cut and removed.	Frequency of clearance.	Square yards grass, &c., cut and removed.	Frequency of clearance.	Square yards grass, &c., cut and removed.	Frequency of clearance.
Aro ... ..	777,400	...	1,548,800	{ Eight times a year	1,548,800	Constantly
Ibadan I. ... ..	...	Six times a year	217,000	Six times a year	140,300	Quarterly
Ibadan II....	490	Annually	450,000	Constantly	450,000	Quarterly
Oshogbo ... ..	...	...	1,760	Six times a year	1,760	Six times a year
Epe ... ..	100,000	Constantly	100,000	Constantly	100,000	Constantly
Badagry ... ..	...	...	60,000	Constantly	19,200	Every 6 months
Warri ... ..	...	...	340	Monthly	340	Monthly
Forcados ... ..	...	Six times a year	...	Fortnightly	387 200	Fortnightly
Sapele ... ..	500	Monthly	1,350,360	Annually	1,350,360	Yearly
Onitsha ... ..	150,000	Quarterly	200,000	When required	200,000	Constantly
Benin City ... ..	50,000	Quarterly	100,000	Every 4 months	150,000	Quarterly
Asaba ... ..	...	...	440,000	Every 6 weeks	440,000	Monthly
Aboh ... ..	...	Continuously	150,000	Constantly	150,000	Monthly
Agbor ... ..	240,000	Continuously	262,500	Constantly	262,500	Constantly
Awka ... ..	...	...	300,000	Every 6 weeks	300,000	Monthly
Okwoga ... ..	169,400	Monthly	96,800	Monthly	100,800	{ Eight times yearly
Udi ... ..	...	Annually	680,000	Annually	680,000	Quarterly
Idah ... ..	...	...	200,000	When required	300,000	Monthly
Calabar ... ..	...	...	69,184	Monthly	104,732	Monthly
Bonny ... ..	271,629	Fortnightly	271,629	Fortnightly	271,729	When required
Opobo ... ..	363,000	Monthly	363,000	Monthly	121,000	Monthly
Degema ... ..	5,000	...	55,000	Monthly	1,000,000	Monthly
Brass ... ..	...	...	43,560	Continuously	43,560	Constantly
Abakaliki ... ..	1,000	Six times a year	500,000	Every 6 months	550,000	Daily
Afikpo ... ..	...	...	360,000	Monthly	20,000	Monthly
Bende ... ..	...	...	...	...	...	When required
Eket ... ..	...	...	100,000	Quarterly	100,000	As required
Ikom ... ..	145,200	Quarterly	150,000	Six times a year	170,000	Quarterly
Ikot Ekpene ... ..	90,000	Continuously	1,000,000	Monthly	1,175,000	Monthly
Itu ... ..	...	...	...	...	29,040	When required
Obudu ... ..	...	...	3,097,600	Continually	348,800	Constantly
Ogoja ... ..	96,800	When required	1,452,000	Six times a year	1,452,000	Constantly
Okigwi ... ..	...	When required	...	...	...	...
Owerri ... ..	...	...	...	Quarterly	...	...
WESTERN PROVINCE ...	877,890	...	2,377,560	...	2,260,060	...
CENTRAL PROVINCE ...	609,900	...	3,779,660	...	4,171,200	...
EASTERN PROVINCE ...	972,629	...	7,461,973	...	4,385,861	...
SOUTHERN NIGERIA	2,460,419	...	13,619,193	...	10,817,121	...

TABLE IV.—continued.  
EXCAVATIONS AND LOW LYING LAND.

	1911.							1912.							1913.						
	Pools and excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, streams, &c. fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.	Pools and excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, streams, &c. fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.	Pools and excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, streams, &c. fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.
Lagos ...	...	...	50,820	...	109,998	...	...	...	...	...	...	102,957	...	...	...	...	...	...	...	...	...
Aro ...	...	...	...	...	...	...	...	...	...	...	...	1,200	...	...	...	...	...	...	...	...	...
Ibadan I. ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ibadan II. ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Oshogbo ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Epe ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Badagry ...	...	...	...	...	...	...	...	Large number	132	10,000	...	...	...	...	400	304	20,000	1	22,455	...	8
Warri ...	...	...	...	...	...	...	...	...	3,984	...	...	...	...	20	...	3,614	...	...	...	...	20
Forcados ...	...	...	...	...	...	...	...	...	1	27,000	...	...	...	...	...	6	9,360	...	...	...	...
Sapele ...	120	12	...	...	...	...	...	90	30	400	...	...	...	...	...	90	...	...	160	...	...
Onitsha ...	500	124	2,420	...	2,000	...	30	240	102	700	...	600	...	20	...	...	...	...	...	...	2
Benin City ...	Many	2	...	...	...	...	...	500	50	1,211	...	4,000	...	17	250	250	3,630	...	Unknown	...	24
Asaba ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Aboh ...	...	...	...	...	...	...	...	4	4	...	...	...	...	6	5	...	...	...	21	...	6
Agbor ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Awka ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Okwoga ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Udi ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Idah ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Calabar ...	...	136	...	...	...	...	...	44	99	...	...	...	...	...	...	12	...	...	...	...	...
Bonny ...	...	2	4,840	...	...	...	10	2	...	2,500	...	3,000	...	...	...	...	100	...	50	...	10
Opobo ...	...	...	4,000	...	3,500	...	50	8	...	4,500	...	6,000	...	...	...	...	812	...	2,166	...	...
Degema ...	...	...	...	...	...	...	...	25	15	...	...	120	...	3	9	47	...	...	...	...	...
Brass ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Abakaliki ...	5	3	...	...	...	...	6	8	5	...	...	40	...	5	3	3	...	...	38	...	5
Afikpo ...	...	...	...	...	...	...	...	1	1	...	...	...	...	10	...	1	...	...	...	...	...
Bende ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ekpet ...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...
Ikom ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ikot Ekpene ...	...	...	...	...	...	...	...	10	6	...	...	1,000	...	8	4	1	...	...	1,500	...	22
Itu ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Obudu ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ogaja ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6
Okigwi ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12
Owerri ...	...	...	...	...	...	...	...	6	30	...	...	...	...	4	...	...	...	...	...	...	...
WESTERN PROVINCE ...	...	...	50,820	...	109,998	...	...	3	235	70,916	...	104,157	...	...	401	308	37,390	1	32,217	...	8
CENTRAL PROVINCE ...	620	138	2,420	...	2,000	...	30	834	4,171	29,311	...	4,600	...	63	300	3,969	22,900	...	181	3	72
EASTERN PROVINCE ...	5	141	8,840	...	3,524	...	66	104	179	7,000	...	10,160	...	40	16	82	912	...	3,754	...	55
SOUTHERN NIGERIA ...	625	279	62,080	...	115,522	...	96	941	5,585	107,227	...	118,917	...	2	717	4,359	38,601	1	36,152	3	135



TABLE IV.—*continued.*

## OILING.

	1911.				1912.				1913.			
	Drains oiled.	Pools and excavations oiled.	Tanks and Barrels oiled.	Men employed daily for oiling.	Drains oiled.	Pools and excavations oiled.	Tanks and Barrels oiled.	Men employed daily for oiling.	Drains oiled.	Pools and excavations oiled.	Tanks and Barrels oiled.	Men employed daily for oiling.
Lagos ... ..	1,762	5,507	70	9	1,122	5,001	56	12	185	9,204	74	4
Aro ... ..	...	23	...	...	2	9	...	...	3	1	...	{ Sanry. } Gang }
Ibadan I. ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Ibadan II. ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Oshogbo ... ..	...	...	...	...	...	...	...	...	...	19	1	...
Epe ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Badagry ... ..	...	...	...	...	Numerous	Numerous	...	2	20	322	...	2
Warri ... ..	...	...	...	...	2,180	642	254	4	3,294	3,467	183	4
Forcados ... ..	81	131	10	...	47	...	1	1	42	50	30	7
Sapele ... ..	...	...	...	...	...	...	...	...	11	...	...	2
Onitsha ... ..	22	...	...	1	20	12	...	1	...	...	...	...
Benin City ... ..	...	...	3	1	...	7	...	1	...	...	...	...
Asaba ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Aboh ... ..	...	...	...	...	...	4	...	6	...	5	...	6
Agbor ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Awka ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Okwoga ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Udi ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Idah ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Calabar ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Bonny ... ..	3	10	2	1	15	2	4	2	...	...	...	...
Opobo ... ..	...	3	37	1	3	3	47	1	21	7	5	2
Degema ... ..	...	...	...	...	...	15	...	3	3	5	47	2
Brass ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Abakaliki ... ..	...	29	...	6	...	8	...	5	...	...	...	...
Afikpo ... ..	...	...	...	...	...	1	...	1	...	6	...	5
Bende ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Eket ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Ikom ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Ikot Ekpene ... ..	...	...	...	...	...	4	...	8	...	...	...	...
Itu ... ..	...	...	...	...	...	...	...	...	...	...	...	8
Obudu ... ..	...	...	...	...	...	3	...	...	...	...	...	...
Ogoja ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Okigwi ... ..	...	...	...	...	...	...	...	...	...	...	...	...
Owerri ... ..	...	...	...	...	...	...	...	...	...	...	...	...
WESTERN PROVINCE ...	1,762	5,530	70	9	1,124	5,010	56	14	208	9,546	75	6
CENTRAL PROVINCE ...	103	133	13	2	2,247	665	255	13	3,347	3,522	213	19
EASTERN PROVINCE ...	3	42	39	8	18	36	51	20	24	18	52	17
SOUTHERN NIGERIA	1,868	5,705	122	19	3,389	5,711	362	47	3,579	13,086	340	42

TABLE IV.—continued.  
INSPECTIONS AND PROSECUTIONS.

	1911.							1912.							1913.									
	Inspectors employed.	Houses inspected.	Houses where larvæ were found.	Notices against larvæ.	Persons fined for larvæ.	Notices re insanitary conditions.	Persons fined for insanitary conditions.	Factories.	Inspectors employed.	Houses inspected.	Houses where larvæ were found.	Notices against larvæ.	Persons fined for larvæ.	Notices re insanitary conditions.	Persons fined for insanitary conditions.	Factories.	Inspectors employed.	Houses inspected.	Houses where larvæ were found.	Notices against larvæ.	Persons fined for larvæ.	Notices re insanitary conditions.	Persons fined for insanitary conditions.	Factories.
Lagos	28	466,070	61,057	...	728	4,388	94	2	29	495,105	26,779	...	848	5,516	70	2	30	533,679	20,043	...	961	4,771	36	2
Aro ...	...	...	...	...	...	...	...	...	1	7,540	110	20	...	...	...	...	1	10,966	116	252	5	...	...	...
Ibadan I.	...	508	48	...	...	...	...	...	2	10,090	575	...	...	96	3	...	3	13,811	1,005	96	...	96	15	...
Ibadan II.	2	372	6	...	...	...	...	...	3	33,164	3,878	...	...	110	16	...	...	47,752	9,269	...	...	...	...	...
Oshogbo	...	...	...	...	...	...	...	...	1	...	...	...	...	2	1	...	...	10,267	1,533	...	...	26	...	...
Epe ...	...	...	...	36	...	76	14	...	1	9,174	1,195	138	30	138	31	...	1	14,109	820	170	102	132	5	...
Badagry	...	...	...	...	...	...	...	...	1	24,762	812	236	...	683	74	...	1	13,471	282	325	114	269	...	...
Warri	4	67,979	922	9,114	56	96	41	...	4	51,171	178	27	50	128	118	...	4	39,842	136	49	23	90	18	...
Forcados	2	13,606	395	8	93	4	...	...	3	13,059	112	4	106	38	...	...	3	31,008	175	76	15	50	1	1
Sapele	2	239	...	...	15	15	...	...	2	9,947	139	...	...	11	...	...	3	7,379	104	114	12	115	...	...
Onitsha	1	609	330	330	33	425	67	...	3	7,171	21	21	89	438	89	...	3	12,800	76	370	117	500	127	...
Benin City	1	498	58	36	17	1	...	...	1	7,034	909	111	308	111	15	...	1	6,558	332	276	132	38	6	...
Asaba	...	...	...	...	...	...	...	...	1	6,759	789	667	5	...	...	...	1	19,404	262	667	5	...	...	...
Aboh	...	1,136	480	...	...	...	...	...	1	1,153	72	40	...	40	5	...	5	1,934	136	65	34	65	634	...
Agbor	1	2,335	445	...	...	...	...	...	2	4,884	164	6	35	34	...	...	2	5,733	11	5	10	33	...	...
Awka	...	...	...	...	...	...	...	...	...	5,572	...	...	...	...	...	...	...	1,442	124	...	...	...	...	...
Okwoga.	...	2,408	...	...	...	...	...	...	...	745	27	...	...	...	...	...	...	5,588	7	...	...	...	...	...
Udi ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	378	13	...	...	...	...	...
Koko	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,762	36	...	...	...	...	...
Idah	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*1	...	...	...	...	...	...	...
Calabar	1	6,883	295	66	64	716	100	1	4	15,490	205	91	23	105	23	...	5	120,948	693	2,321	19	2,064	41	1
Bonny	1	408	320	460	69	40	2	...	1	7,731	529	79	29	8	...	...	1	3,827	399	79	24	8	...	...
Opobo	1	3,359	17	4	4	...	...	...	1	6,292	233	46	8	55	12	...	1	10,924	224	85	72	64	...	...
Degema	1	7,269	214	18	7	22	13	...	1	15,072	677	...	...	5,457	176	...	2	26,276	163	30	90	102	15	...
Brass	2	17,682	3,957	73	...	...	2	...	1	8,909	132	...	31	21	7	...	1	9,169	31	4	26	...	...	...
Abakaliki	...	212	...	...	...	...	...	...	...	5,038	49	49	...	...	...	...	...	5,200	6	6	...	3	...	...
Afikpo	...	...	...	...	...	...	...	...	1	3,395	320	125	...	...	...	...	1	7,750	583	140	45	61	27	...
Bende	...	...	...	...	...	...	...	...	1	2,640	244	...	...	515	62	...	1	1,717	72	...	...	377	63	...
Eket	...	...	...	...	...	...	...	...	1	718	417	...	...	...	...	...	1	...	...	...	...	...	...	...
Ikom	...	...	...	1	...	11	...	...	...	3,185	89	...	...	...	...	...	...	4,439	143	6	14	...	...	...
Ikot Ekpene	...	...	...	...	...	...	...	...	...	...	...	60	7	...	...	...	...	6,943	39	27	...	...	...	...
Itu ...	...	...	...	...	...	...	...	...	...	1,603	121	...	...	...	...	...	1	6,666	113	60	1	37	...	...
Obudu	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,017	20	18	...	19	...	...
Ogoja	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,626	6	...	...	...	...	...
Okigwi	...	7,800	61	...	...	...	...	...	...	7,876	27	...	...	...	...	...	...	8,300	2	...	...	...	...	...
Owerri	...	...	...	...	...	...	...	...	2	7,450	314	367	29	...	29	...	1	5,881	240	93	20	21	15	...
WESTERN PROVINCE	30	466,950	61,111	36	728	4,464	108	2	38	579,835	33,349	394	878	6,545	195	2	37	644,055	33,068	853	1,082	5,294	56	2
CENTRAL PROVINCE	11	88,810	2,630	9,488	214	541	108	...	17	107,495	2,412	876	593	800	227	...	26	133,828	1,412	1,622	348	891	786	1
EASTERN PROVINCE	6	43,613	4,864	622	144	789	117	1	13	85,399	3,357	817	127	6,161	309	1	16	220,756	2,774	2,869	316	3,512	162	1
SOUTHERN NIGERIA...	47	599,373	68,605	10,146	1,086	5,794	333	3	68	772,729	39,118	2,087	1,598	13,506	731	3	79	998,639	37,254	5,344	1,746	9,697	1,004	4

\* Record incomplete.



TABLE V.

METEOROLOGICAL RETURNS—1913.

WESTERN PROVINCE.

	LAGOS.						ONDO.						IBADAN.						OLOKEMEJI.					
	Lat. 6°—27' N. Long. 3°—24' E.						Lat. 7°—06' N. Long. 4°—50' E.						Lat. 7°—24' N. Long. 3°—53' E.						Lat. 7°—25' N. Long. 3°—33' E.					
Months.	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	
January ...	91°·5	72°·0	89°·4	75°·2	Nil	...	95°·0	60°·0	90°·5	69°·1	Nil	...	99°·0	56°·0	92°·8	60°·8	Nil	...	102°·0	59°·0	96°·6	69°·7	Nil	...
February...	92°·0	71°·0	89°·1	75°·9	2·98	...	97°·0	65°·0	91°·5	71°·5	2·70	...	100°·0	56°·0	95°·0	61°·3	0·85	...	102°·0	59°·0	97°·6	71°·8	0·13	...
March ...	97°·5	71°·3	89°·3	77°·3	1·05	...	98°·0	63°·0	93°·9	70°·5	0·95	...	101°·0	57°·0	97°·4	60°·3	Nil	...	102°·0	64°·0	98°·0	71°·8	2·07	...
April ...	92°·0	72°·0	88°·7	76°·7	2·95	...	96°·0	67°·0	89°·6	71°·5	5·73	...	101°·0	60°·0	97°·3	69°·9	3·78	...	102°·0	66°·0	94°·8	72°·3	7·07	...
May ...	90°·2	72°·0	87°·4	75°·7	9·91	...	92°·0	66°·0	87°·9	70°·8	6·90	...	98°·0	68°·0	93°·1	71°·1	2·31	...	97°·0	62°·0	92°·8	71°·2	2·99	...
June ...	89°·5	71°·5	86°·7	75°·1	116·87	...	90°·0	65°·0	85°·9	70°·2	2·89	...	98°·0	60°·0	92°·1	67°·0	1·77	...	96°·0	67°·0	89°·9	71°·4	5·92	...
July ...	87°·2	71°·0	83°·7	73°·7	15·57	...	87°·0	67°·0	82°·6	69°·6	6·52	...	91°·0	66°·0	87°·3	70°·0	9·66	...	98°·0	68°·0	85°·7	71°·9	6·74	...
August ...	86°·2	70°·3	84°·0	74°·3	2·48	...	84°·0	66°·0	81°·3	69°·6	11·30	...	97°·0	67°·0	86°·8	70°·1	11·35	...	88°·0	66°·0	85°·7	71°·6	2·04	...
September	87°·5	70°·3	84°·7	70°·3	5·40	...	85°·0	66°·0	82°·4	69°·5	10·30	...	100°·0	67°·0	89°·3	70°·0	13·63	...	96°·0	68°·0	86°·8	72°·1	5·94	...
October ...	91°·3	69°·3	85°·3	73°·5	4·72	...	90°·0	66°·0	85°·0	69°·5	6·77	...	96°·0	66°·0	90°·1	70°·1	4·20	...	94°·0	67°·0	88°·4	71°·2	2·91	...
November	99°·3	72°·2	90°·1	75°·1	0·61	...	89°·0	67°·0	88°·1	69°·3	1·08	...	97°·0	66°·0	93°·2	70°·2	1·70	...	98°·0	63°·0	92°·5	69°·1	0·67	...
December...	99°·5	68°·0	90°·4	73°·6	0·11	...	91°·0	61°·0	87°·6	68°·2	Nil	...	99°·0	63°·0	94°·9	68°·4	Nil	...	99°·0	56°·0	95°·8	66°·8	0·10	...
MEANS ...	91°·9	70°·9	87°·4	74°·7	60·65 Total	...	91°·1	65°·0	87°·2	69°·9	55·14 Total	...	98°·1	62°·6	92°·4	67°·4	49·19 Total	...	96°·1	63°·7	92°·0	70°·9	36·58 Total	...

TABLE V.—*continued.*

METEOROLOGICAL RETURNS—1913. WESTERN PROVINCE.—*continued.*

Months.	BADAGRI. Lat. 6°—25' N. Long. 2°—53' E.						EPE. Lat. 6°—35' N. Long. 4°—00' E.						OSHOGBO. Lat. 7°—47' N. Long. 4°—33' E.						OYO. Lat. 7°—51' N. Long. 3°—55' E.					
	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	
January...	91°·0	69°·0	89°·3	73°·7	Nil		92°·0	65°·0	90°·0	72°·6	Nil		99°·0	63°·0	93°·2	68°·0	0·05		99°·0	63°·0	93°·2	68°·0	Nil	
February	93°·0	66°·8	89°·3	74°·4	4·43		94°·0	67°·0	90°·7	73°·1	1·10		100°·0	67°·0	97°·0	71°·3	2·65		100°·0	67°·0	97°·0	71°·3	0·37	
March	91°·4	69°·8	89°·5	76°·2	1·00		94°·0	67°·0	92°·0	72°·6	0·65		100°·0	65°·0	95°·9	69°·5	1·13		100°·0	65°·0	95°·9	69°·5	2·22	
April	91°·0	69°·8	88°·0	76°·2	2·60		93°·0	69°·0	89°·8	72°·4	5·46		100°·0	62°·0	93°·7	70°·7	3·38		100°·0	62°·0	93°·7	70°·7	2·56	
May	90°·0	69°·5	87°·4	74°·7	5·93		93°·0	70°·0	90°·3	72°·5	6·28		96°·0	62°·0	91°·7	68°·2	4·16		96°·0	62°·0	91°·7	68°·2	4·19	
June	90°·0	70°·0	85°·7	74°·2	11·93		92°·0	69°·0	89°·4	71°·8	3·14		92°·0	63°·0	87°·5	70°·1	7·80		92°·0	63°·0	87°·5	70°·1	1·74	
July	85°·5	70°·0	82°·3	73°·5	18·33		88°·0	69°·0	82°·9	71°·3	18·34		86°·0	66°·0	83°·1	69°·8	5·13	No temperature records.	86°·0	66°·0	83°·1	69°·8	7·07	
August	91°·0	70°·0	83°·1	73°·6	1·99		*	*	*	*	*		86°·0	68°·0	83°·7	69°·4	4·02		86°·0	68°·0	83°·7	69°·4	4·21	
September	95°·0	69°·0	84°·0	73°·8	5·06		88°·0	70°·0	84°·7	72°·2	13·85		90°·0	67°·0	83°·7	70°·6	10·36		90°·0	67°·0	83°·7	70°·6	7·65	
October	88°·0	67°·0	84°·0	72°·3	7·74		93°·0	68°·0	85°·8	72°·6	6·29		90°·0	69°·0	85°·8	70°·7	4·05		90°·0	69°·0	85°·8	70°·7	4·89	
November	91°·0	70°·0	88°·8	73°·7	0·53		93°·0	69°·0	89°·5	71°·4	0·60		93°·0	65°·0	90°·6	68°·9	1·80		93°·0	65°·0	90°·6	68°·9	1·69	
December	91°·0	64°·0	89°·0	71°·7	Nil		92°·0	61°·0	84°·5	69°·2	Nil		97°·0	60°·0	94°·7	67°·5	Nil		97°·0	60°·0	94°·7	67°·5	Nil	
MEANS	90°·6	68°·8	86°·7	74°·0	59·54 Total		92°·0†	67°·6†	88°·1†	71°·9†	55·71† Total		94°·1	64°·7	90°·0	69°·5	44·53 Total		94°·1	64°·7	90°·0	69°·5	36·59 Total	

\* No records available.

† Records incomplete.



TABLE V.—continued.

METEOROLOGICAL RETURNS—1913. WESTERN PROVINCE.—continued.

Months.	EBU'NE METTA. Lat. 6°—29' N. Long. 3°—23' E.						ABEOKUTA. Lat. 7°—09' N. Long. 3°—21' E.						OGBOMOSHO. Lat. 8°—08' N. Long. 4°—14' E.						YABA. Lat. 6°—32' N. Long. 3°—23' E.					
	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	
January	92°·5	66°·5	90°·5	72°·0	Nil	...	100°·0	63°·0	95°·7	71°·9	Nil	...	99°·0	62°·0	95°·7	67°·5	Nil	...	95°·0	64°·0	92°·3	70°·3	Nil	...
February	98°·0	68°·0	89°·8	73°·5	5·06	...	101°·0	68°·0	96°·2	71°·7	0·64	...	102°·0	63°·0	96°·7	70°·1	0·44	...	94°·0	66°·0	91°·4	72°·4	2·77	...
March	93°·5	70°·0	91°·2	74°·5	0·84	...	103°·0	68°·0	98°·8	72°·1	2·90	...	100°·0	64°·0	96°·7	69°·5	0·09	...	97°·0	62°·0	93°·7	72°·0	0·91	...
April	92°·0	70°·0	89°·2	73°·4	2·87	...	98°·0	59°·0	94°·5	70°·6	4·09	...	100°·0	63°·0	92°·9	69°·6	3·96	...	96°·0	64°·0	91°·9	71°·8	3·13	...
May	103°·0	70°·5	88°·8	73°·9	8·84	...	97°·0	68°·0	92°·3	71°·0	5·19	...	94°·0	63°·0	88°·5	68°·0	7·91	...	94°·0	70°·0	90°·6	72°·3	6·77	...
June	91°·0	70°·0	87°·4	73°·6	11·79	...	94°·0	66°·0	90°·5	69°·7	6·20	...	92°·0	62°·0	86°·5	67°·1	3·21	...	93°·0	66°·0	88°·1	70°·3	7·10	...
July	88°·0	69°·0	83°·2	73°·2	19·22	...	98°·0	67°·0	87°·3	68°·8	9·37	...	89°·0	62°·0	85°·0	66°·5	5·08	...	91°·0	66°·0	85°·4	68°·0	10·91	...
August...	89°·0	69°·0	84°·7	72°·5	2·92	...	93°·0	65°·0	90°·9	67°·2	4·15	...	90°·0	64°·0	84°·6	66°·3	5·56	...	92°·0	68°·0	85°·1	71°·4	3·47	...
September	88°·0	69°·0	85°·4	72°·5	3·32	...	94°·0	65°·0	98°·8	68°·5	6·28	...	89°·0	63°·0	84°·8	76°·0	12·60	...	90°·0	68°·0	84°·4	71°·7	4·11	...
October	88°·0	68°·0	85°·4	71°·5	6·31	...	94°·0	67°·0	90°·2	68°·9	5·05	...	93°·0	67°·0	87°·5	69°·6	4·70	...	91°·0	67°·0	87°·2	70°·6	3·85	...
November	91°·0	69°·0	89°·0	71°·7	1·79	...	96°·0	66°·0	93°·9	69°·5	0·62	...	95°·0	61°·0	92°·0	66°·2	0·16	...	93°·0	69°·0	91°·2	70°·6	2·33	...
December	91°·0	64°·0	89°·1	69°·8	0·11	...	96°·0	64°·0	92°·1	71°·8	Nil	...	97°·0	57°·0	94°·2	58°·7	Nil	...	94°·0	59°·0	91°·8	66°·3	0·10	...
MEANS	92°·1	68°·6	87°·8	72°·6	63·07 Total	...	97°·0	65°·5	92°·7	70°·1	44·49 Total	...	96°·0	62°·6	90°·4	67°·9	43·71 Total	...	93°·3	65°·7	89°·4	70°·6	45·45 Total	...

TABLE V.—continued.  
METEOROLOGICAL RETURNS, 1913.  
EASTERN PROVINCE.

		BONNY. Lat. 4°—27' N. Long. 7°—10' E.						CALABAR. Lat. 4°—58' N. Long. 8°—19' E.						IKOTEKPENE. Lat. 5°—12' N. Long. 7°—43' E.						IKOM. Lat. 5°—57' N. Long. 8°—43' E.					
Months.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	
January...	...	98°·0	66°·0	88°·1	71°·0	Nil		94°·0	70°·0	90°·2	76°·1	Nil		94°·0	56°·0	92°·6	60°·4	Nil		91°·6	68°·0	89°·5	70°·5	Nil	
February	...	92°·0	66°·0	86°·6	71°·8	9·58		94°·0	70°·0	90°·4	73°·0	2·71		98°·0	56°·0	95°·3	69°·4	2·58		93°·6	70°·0	89°·9	71°·0°	2·89	
March	...	91°·0	67°·0	87°·5	72°·4	7·69		92°·0	74°·0	90°·1	76°·2	3·23		97°·0	63°·0	95°·0	70°·6	3·26		93°·2	67°·5	88°·8	67°·7	1·39	
April	...	90°·0	67°·0	87°·6	71°·5	7·86		94°·0	74°·0	90°·8	76°·0	8·19		96°·0	69°·0	95°·1	70°·7	9·71		92°·8	68°·6	90°·1	70°·4	6·54	
May	...	90°·0	65°·0	86°·4	70°·8	8·34		94°·0	70°·0	90°·8	74°·7	14·17		96°·0	69°·0	95°·0	70°·4	10·84		94°·0	69°·7	90°·7	71°·8	10·09	
June	...	88°·4	65°·0	85°·1	69°·5	21·44		94°·0	72°·0	90°·9	76°·3	9·00		96°·0	69°·0	94°·8	70°·1	13·31		93°·0	73°·0	90°·1	75°·8	13·60	
July	...	89°·0	64°·0	85°·7	66°·2	30·72		92°·0	72°·0	89°·0	73°·2	28·15		95°·0	68°·0	94°·0	69°·6	18·57		91°·0	70°·0	89°·5	72°·9	11·88	
August	...	88°·4	63°·8	85°·9	65°·8	38·10		91°·0	72°·0	89°·9	74°·0	21·35		96°·0	69°·0	94°·4	69°·9	20·74		91°·0	68°·0	88°·1	70°·3	10·68	
September	...	89°·0	64°·0	86°·2	67°·4	22·70		91°·0	72°·0	89°·1	73°·8	14·86		96°·0	69°·0	94°·7	70°·0	11·38		91°·0	65°·0	89°·3	69°·5	15·16	
October	...	89°·4	62°·8	87°·0	67°·7	21·90		92°·0	72°·0	89°·3	74°·0	13·49		96°·0	69°·0	94°·5	70°·0	9·62		91°·0	65°·0	89°·3	69°·1	15·70	
November	...	93°·0	68°·0	90°·3	69°·7	5·02		94°·0	74°·0	90°·3	75°·4	9·53		96°·0	59°·0	94°·0	69°·1	1·49		93°·0	63°·0	90°·4	67°·0	Nil	
December	...	93°·4	68°·0	91°·0	69°·2	1·70		90°·0	72°·0	89°·0	73°·3	4·16		95°·0	62°·0	93°·4	70°·6	Nil		92°·0	60°·0	89°·6	63°·0	0·11	
MEANS	...	90°·9	65°·5	87°·3	69°·4	175·05 Total		92°·6	72°·0	89°·9	74°·6	128·84 Total		96°·0	64°·8	94°·4	69°·2	101·50 Total		92°·2	67°·3	89°·6	69°·9	88°·04	



TABLE V.—*continued.*

METEOROLOGICAL RETURNS, 1913. EASTERN PROVINCE.—*continued.*

	BRASS.						DEGEMA.						OWERRI.						OPOBO.							
	Lat. 4°—18' N. Long. 6°—14' E.						Lat. 4°—45' N. Long. 6°—47' E.						Lat. 5°—29' N. Long. 7°—03' E.						Lat. 4°—34' N. Long. 7°—33' E.							
	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	
Months.																										
January	...	96°·0	66°·0	89°·9	72°·8	1·02	96°·0	(?) 81°·0	91°·6	84°·4	Nil	95°·0	57°·0	91°·7	65°·0	Nil	97°·0	68°·0	88°·8	71°·9	Nil	97°·0	68°·0	88°·8	71°·9	Nil
February	...	93°·0	70°·0	89°·6	74°·5	5·91	95°·0	78°·0	89°·8	82°·5	2·97	96°·0	61°·0	92°·3	66°·3	2·10	96°·0	68°·0	89°·1	74°·2	4·68	96°·0	68°·0	89°·1	74°·2	4·68
March	...	93°·0	69°·0	91°·1	74°·6	4·91	95°·0	70°·0	88°·6	81°·0	3·19	96°·0	61°·0	91°·9	64°·2	1·68	94°·0	60°·0	90°·4	70°·8	4·94	94°·0	60°·0	90°·4	70°·8	4·94
April	...	94°·0	70°·0	89°·6	74°·9	7·57	92°·0	71°·0	83°·8	76°·1	5·07	94°·0	67°·0	90°·7	68°·9	10·50	99°·0	60°·0	96°·0	71°·9	11·23	99°·0	60°·0	96°·0	71°·9	11·23
May	...	93°·0	68°·0	88°·7	74°·4	9·71	90°·0	71°·0	82°·7	75°·6	8·50	94°·0	65°·0	90°·0	68°·6	8·76	99°·0	68°·0	94°·6	73°·7	2·94	99°·0	68°·0	94°·6	73°·7	2·94
June	...	91°·0	68°·0	86°·7	73°·1	25·43	86°·0	68°·0	81°·3	74°·3	4·72	91°·0	60°·0	87°·8	69°·2	6·01	94°·0	72°·0	88°·2	76°·7	8·09	94°·0	72°·0	88°·2	76°·7	8·09
July	...	88°·0	70°·0	84°·0	72°·5	30·67	86°·0	68°·0	82°·0	73°·4	13·32	89°·0	65°·0	84°·7	68°·1	7·79	90°·0	69°·4	80°·5	78°·2	26·66	90°·0	69°·4	80°·5	78°·2	26·66
August	...	88°·0	68°·0	82°·0	72°·3	26·73	89°·0	68°·0	82°·6	70°·2	24·98	88°·0	68°·0	83°·9	70°·0	18·82	88°·0	69°·0	85°·6	71°·7	32·16	88°·0	69°·0	85°·6	71°·7	32·16
September	...	87°·0	67°·0	83°·4	71°·9	30·65	89°·0	68°·0	83°·6	70°·8	14·98	88°·0	68°·0	86°·6	70°·0	13·89	88°·0	70°·0	84°·4	71°·8	14·93	88°·0	70°·0	84°·4	71°·8	14·93
October	...	88°·0	69°·0	84°·5	71°·6	13·36	90°·0	69°·0	84°·7	72°·0	8·41	92°·0	67°·0	87°·9	69°·3	6·65	88°·0	69°·0	85°·6	72°·3	8·94	88°·0	69°·0	85°·6	72°·3	8·94
November	...	90°·0	71°·0	87°·7	74°·4	5·73	92°·0	72°·0	89°·0	74°·8	1·40	94°·0	62°·0	91°·4	66°·4	Nil	91°·0	69°·0	88°·3	72°·7	Nil	91°·0	69°·0	88°·3	72°·7	Nil
December	...	91°·0	66°·0	88°·7	72°·1	0·85	95°·0	70°·0	90°·7	71°·7	0·46	95°·0	58°·0	91°·8	63°·6	0·15	90°·0	68°·0	86°·4	74°·4	0·85	90°·0	68°·0	86°·4	74°·4	0·85
MEANS	...	91°·0	68°·5	87°·1	75°·7	162·54 Total	91°·2	71°·1	85°·8	75°·5	87·91 Total	95°·1	63°·2	89°·2	67°·4	76·35 Total	92°·8	67°·5	88°·1	73°·3	115·42 Total	92°·8	67°·5	88°·1	73°·3	115·42 Total

TABLE V.—*continued.*

METEOROLOGICAL RETURNS—1913      EASTERN PROVINCE.—*continued.*

		AFIKPO.						AKASSA.						BENDE.						OBUDU.					
		Lat. 5°—53' N. Long. 7°—55' E.						Lat. 4°—19' N. Long. 6°—03' E.						Lat. 5°—34' N. Long. 7°—34' E.						Lat. 6°—38' N. Long. 9°—08' E.					
Months.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	
January...	...	95°·0	61°·0	90°·7	69°·3	Nil		90°·0	68°·0	88°·4	70°·3	Nil		93°·0	61°·0	89°·8	67°·5	Nil		96°·0	58°·0	92°·6	64°·0	Nil	
February	...	98°·0	60°·0	91°·7	71°·0	0·80		91°·0	68°·0	89°·9	72°·2	13·37		95°·0	64°·0	91°·3	67°·4	0·95		99°·0	61°·0	93°·6	71°·4	0·16	
March ...	...	97°·0	67°·0	90°·2	72°·9	0·62		92°·0	69°·0	90°·4	69°·5	9·01		96°·0	66°·0	91°·6	69°·2	1·24		99°·0	61°·0	95°·3	71°·4	0·56	
April ...	...	97°·0	60°·0	90°·8	70°·2	4·54		93°·0	60°·0	91°·3	69°·0	4·33		96°·0	64°·0	92°·0	68°·2	2·81		95°·0	68°·0	90°·3	72°·4	5·17	
May ...	...	99°·0	60°·0	89°·3	70°·5	10·65		94°·0	67°·0	89°·8	69°·4	4·86		98°·0	64°·0	92°·2	67°·9	1·92		92°·0	68°·0	87°·7	72°·2	6·50	
June ...	...	94°·0	61°·0	88°·3	70°·4	11·72		90°·0	60°·0	85°·5	68°·2	25·79		98°·0	66°·0	91°·6	68°·4	4·08		89°·0	67°·0	86°·0	70°·3	9·00	
July ...	...	97°·0	64°·0	85°·6	71°·6	8·13		87°·0	59°·0	82°·6	68°·4	28·48		92°·0	67°·0	89°·2	70°·1	11·24		86°·0	69°·0	83°·7	70°·5	5·68	
August ...	...	97°·0	60°·0	87°·2	69°·7	9·12		90°·0	60°·0	83°·0	66°·8	30·55		91°·0	66°·0	88°·1	72°·1	17·30		86°·0	66°·0	83°·1	70°·0	11·52	
September	...	93°·0	64°·0	87°·5	71°·1	3·87		89°·0	60°·0	82°·8	68°·6	38·04		92°·0	68°·0	89°·5	70°·7	9·64		89°·0	67°·0	83°·9	69°·4	14·75	
October ...	...	97°·0	65°·0	88°·6	71°·7	6·53		90°·0	60°·0	85°·4	67°·6	24·05		92°·0	68°·0	87°·4	70°·9	10·72		89°·0	67°·0	85°·6	69°·8	12·09	
November	...	94°·0	65°·0	89°·3	72°·4	Nil		91°·0	60°·0	88°·5	68°·2	5·51		93°·0	61°·0	89°·4	66°·3	Nil		93°·0	61°·0	89°·4	66°·3	Nil	
December	...	98°·0	60°·0	89°·4	69°·4	0·10		93°·0	61°·0	90°·0	67°·8	0·42		*	*	*	*	*		93°·0	56°·0	89°·6	62°·6	Nil	
MEANS	...	96°·3	62°·2	89°·6	70°·8	56·08 Total		90°·8	62°·6	87°·3	68°·8	184·41 Total		94°·2†	65°·0†	90°·7†	68°·9†	59·90† Total		92°·1	64°·1	88°·4	69°·2	66·43 Total	

\* No records available.

† Records incomplete.



TABLE V.—*continued.*  
METEOROLOGICAL RETURNS—1913. EASTERN PROVINCE—*continued.*

Month.	OKIGWI. Lat. 5°—48' N. Long. 0°—19' E.						ABAKALIKI. Lat. 6°—18' N. Long. 0°—04' E.											
	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	
January...	93°·0	70°·0	89°·7	73°·5	Nil	...	91°·0	66°·0	87°·5	72°·1	Nil	...						
February	98°·0	69°·0	87°·2	73°·1	1·38	...	94°·0	71°·0	89°·3	75°·7	1·27	...						
March ...	94°·0	69°·0	88°·8	73°·8	1·92	...	93°·0	71°·0	90°·8	75°·8	0·24	...						
April ...	93°·0	68°·0	84°·6	73°·5	10·97	...	92°·0	71°·0	87°·5	75°·0	9·51	...						
May ...	88°·0	68°·0	81°·6	72°·3	8·68	...	97°·0	71°·0	87°·2	73°·3	11·65	...						
June ...	90°·0	56°·0	82°·1	61°·2	13·36	...	90°·0	69°·0	86°·5	72°·8	6·92	...						
July ...	88°·0	56°·0	73°·9	56°·0	10·31	...	90°·0	70°·0	85°·9	72°·3	11·37	...						
August ...	86°·0	63°·0	79°·4	65°·7	12·63	...	90°·0	68°·0	85°·6	71°·0	5·72	...						
September	89°·0	57°·0	83°·2	70°·3	12·52	...	89°·0	64°·0	86°·4	71°·1	11·37	...						
October ...	87°·0	67°·0	83°·4	71°·0	7·11	...	91°·0	67°·0	87°·0	71°·0	9·46	...						
November	93°·0	69°·0	88°·1	72°·6	Nil	...	96°·0	63°·0	91°·6	69°·6	Nil	...						
December	93°·0	68°·0	90°·5	71°·6	0·26	...	95°·0	57°·0	91°·8	64°·5	0·26	...						
MEANS	91°·0	65°·0	84°·4	69°·5	79·14 Total	...	92°·3	67°·3	88°·1	72°·0	67·77 Total	...					Total	

TABLE V.--continued.  
METEOROLOGICAL RETURNS, 1913.  
CENTRAL PROVINCE.

Months.	FORCADOS. Lat. 5°—23' N. Long. 5°—26' E.						SAPELE. Lat. 5°—55' N. Long. 5°—42' E.						BENIN CITY. Lat. 6°—20' N. Long. 5°—36' E.						ONITSHA. Lat. 6°—10' N. Long. 6°—47' E.					
	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	
January...	93°·0	69°·0	88°·8	73°·1	Nil		92°·0	59°·0	89°·0	65°·9	Nil		90°·0	59°·0	87°·0	64°·9	Nil		99°·0	67°·0	94°·4	74°·0	Nil	
February	93°·0	70°·0	88°·6	74°·3	7·80		97°·0	64°·0	91°·0	67°·5	5·50		89°·0	64°·0	87°·4	65°·1	1·60		99°·0	77°·0	95°·1	82°·2	0·42	
March ...	92°·0	70°·0	88°·5	74°·5	5·56		95°·0	61°·0	93°·0	64°·0	0·61		89°·0	64°·0	86°·8	64°·8	0·50		99°·0	*	97°·7	*	1·05	
April ...	92°·0	71°·0	88°·5	74°·1	10·00		96°·0	64°·0	91°·0	64°·2	7·00		92°·0	64°·0	88°·5	69°·2	4·96		99°·0	*	93°·4	*	8·39	
May ...	93°·0	63°·0	89°·1	72°·6	20·74		94°·0	63°·0	90°·1	65°·8	8·69		92°·0	63°·0	88°·6	69°·7	4·53		97°·0	*	91°·8	*	8·79	
June ...	89°·0	65°·0	83°·6	72°·2	30·09		91°·0	62°·0	88°·2	64°·7	14·19		91°·0	60°·0	86°·8	66°·9	7·84		95°·0	*	91°·8	*	6·20	
July ...	82°·0	76°·0	76°·8	71°·1	49·50		87°·0	60°·0	84°·4	58°·2	16·91		89°·0	65°·0	84°·0	69°·3	14·60		94°·0	*	88°·5	*	11·97	
August ...	*	69°·0	*	71°·8	41·54		88°·0	60°·0	84°·7	62°·9	30·07		88°·0	64°·0	83°·4	67°·2	18·35		93°·0	*	87°·9	*	11·18	
September	80°·0	62°·0	78°·0	71°·2	47·99		92°·0	60°·0	86°·5	63°·2	13·39		89°·0	62°·0	84°·5	67°·1	13·29		93°·0	69°·0	87°·9	72°·2	10·46	
October ...	83°·0	68°·0	80°·4	71°·9	25·96		92°·0	61°·0	88°·1	64°·0	9·44		91°·0	64°·0	86°·4	67°·0	8·14		93°·0	68°·0	89°·3	72°·6	7·18	
November	85°·0	70°·0	82°·9	72°·9	4·38		93°·0	60°·0	84°·5	65°·2	Nil		91°·0	61°·0	89°·2	65°·9	0·12		95°·0	67°·0	92°·7	73°·1	Nil	
December	90°·0	64°·0	86°·3	72°·3	0·40		93°·0	56°·0	88°·8	61°·3	0·05		91°·0	56°·0	88°·9	62°·7	1·08		96°·0	62°·0	93°·3	68°·9	0·10	
MEANS ...	88°·3†	67°·6	77°·6†	72°·6	243·96 Total		93°·0	60°·8	88°·7	64°·7	105·85 Total		90°·1	62°·1	86°·8	66°·6	75·01 Total		96°·0	69°·8†	91°·9	72°·0†	65·74 Total	

\* No records available. † Records incomplete.



TABLE V.—continued.

METEOROLOGICAL RETURNS, 1913. CENTRAL PROVINCE—continued.

Months.	WARRI. Lat. 5°—31' N. Long. 5°—44' E.						ABOH. Lat. 5°—32' N. Long. 6°—32' E.						UDI. Lat. 6°—14' N. Long. 7°—22' E.						OK WOGO. Lat. 6°—59' N. Long. 7°—45' E.					
	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	
January...	95°0	60°0	92°2	68°3	Nil	...	94°0	60°0	90°7	69°5	Nil	...	90°0	72°0	86°4	73°4	0·20	...	99°0	56°0	93°7	63°3	Nil	...
February	95°0	68°0	91°6	69°8	2·42	...	98°0	67°0	92°0	72°1	1·36	...	*	69°0	*	72°1	0·40	...	100°0	66°0	93°9	70°6	0·96	...
March ...	96°0	68°0	94°0	70°2	4·25	...	99°0	66°0	93°7	71°8	3·25	...	96°0	66°0	86°3	72°8	3·10	...	99°0	61°0	95°1	69°3	0·90	...
April ...	92°0	68°0	89°3	70°1	6·10	...	96°0	70°0	91°2	72°6	4·69	...	88°0	72°0	86°1	74°1	5·00	...	97°0	68°0	90°9	72°5	5·51	...
May ...	95°0	66°0	89°8	70°7	8·85	..	95°0	69°0	88°5	72°2	7·78	...	88°0	60°0	86°3	71°2	10·90	...	92°0	67°0	89°1	72°0	5·34	...
June ...	95°0	66°0	90°5	69°9	9·57	...	94°0	69°0	89°3	72°6	10·31	...	90°0	66°0	86°6	71°5	13·70	...	91°0	57°0	88°0	70°4	4·28	...
July ...	91°0	65°0	85°2	69°2	17·64	...	95°0	63°0	88°2	72°5	5·77	...	88°0	59°0	85°8	68°8	Broken Glasses	...	89°0	56°0	85°0	58°0	10·64	...
August ...	97°0	65°0	84°5	68°7	32·80	...	90°0	70°0	85°5	72°5	25·80	...	90°0	68°0	87°3	69°7		...	88°0	56°0	84°3	57°9	10·37	...
September	90°0	65°0	87°6	68°9	19·60	...	90°0	61°0	85°7	72°4	13·82	...	90°0	61°0	87°9	69°1	...	...	89°0	56°0	84°9	63°3	10·76	...
October ...	95°0	68°0	90°6	70°8	10·83	...	92°0	68°0	88°4	72°4	6·27	...	90°0	66°0	85°8	70°2	3·99	...	91°0	60°0	87°5	63°8	8·36	...
November	96°0	68°0	94°1	71°7	0·10	...	93°0	70°0	89°6	72°1	Nil	...	96°0	70°0	91°5	72°5	Nil	...	94°0	*	90°4	*	Nil	...
December	94°0	59°0	92°2	66°5	Nil	...	93°0	61°0	89°4	68°5	Nil	...	93°0	66°0	90°0	71°0	0·03	...	96°0	*	92°4	*	Nil	...
MEANS	94°2	65°5	90°1	69°5	112·16 Total	...	94°1	66°1	89°3	71°7	79·05 Total	...	90°8†	66°2	87°3†	71°3	37·32† Total	...	93°7	60°3†	89°6	66°1†	57·12 Total.	...

\* No records available. † Records incomplete.

TABLE V.—continued.  
METEOROLOGICAL RETURNS, 1913.                      CENTRAL PROVINCE—continued.

Months.	ASABA. Lat. 6°—12' N. Long. 6°—44' E.						AGBOR. Lat. 6°—16' N. Long. 6°—12' E.											
	Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.		Absolute Shade Max.	Absolute Shade Min.	Average Max.	Average Min.	Rainfall in inches.	
January ...	94°·0	58°·0	91°·0	68°·0	Nil		95°·0	56°·0	94°·0	62°·9	0·05							
February ...	100°·0	66°·0	93°·3	72°·6	0·64		96°·0	58°·0	92°·1	63°·8	2·65							
March ...	102°·0	60°·0	96°·0	70°·7	0·80		96°·0	58°·0	94°·6	60°·6	1·43							
April ...	99°·0	70°·0	92°·6	72°·5	5·19		97°·0	59°·0	93°·1	60°·8	4·80							
May ...	94°·0	68°·0	89°·8	71°·5	7·19		95°·0	58°·0	92°·4	60°·0	8·40							
June ...	96°·0	65°·0	88°·4	70°·8	6·06		95°·0	59°·0	90°·4	59°·7	11·40							
July ...	*	*	*	*	*		92°·0	58°·0	89°·1	59°·2	15·65							
August ...	*	*	*	*	*		90°·0	58°·0	88°·8	59°·6	8·75							
September ...	90°·0	67°·0	86°·5	70°·5	9·57		90°·0	58°·0	88°·9	59°·3	12·32							
October ...	91°·0	69°·0	88°·0	71°·3	5·77		95°·0	58°·0	91°·0	60°·1	6·90							
November ...	94°·0	63°·0	90°·9	70°·0	Nil		96°·0	56°·0	93°·7	59°·2	Nil							
December ...	94°·0	60°·0	91°·2	66°·4	Nil		97°·0	56°·0	95°·0	60°·7	Nil							
MEANS ...	95°·4†	64°·6†	90°·8†	70°·4†	35·22† Total		94°·5	57°·6	91°·9	60°·5	72·35 Total						Total	

\* No records available.                      † Records incomplete.



TABLE V.—*continued.*

## RAINFALL IN INCHES FOR 1913.

Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Lagos ...	Nil	2·98	1·05	2·95	7·91	16·87	15·57	2·48	5·40	4·72	0·61	0·11	60·65
Ondo ...	Nil	2·70	0·95	5·73	6·90	2·89	6·52	11·30	10·30	6·77	1·08	Nil	55·14
Ibadan ...	Nil	0·85	*	3·78	2·31	1·77	9·60	11·35	13·63	4·20	1·70	Nil	49·19†
Olokemeji ...	Nil	0·13	2·07	7·07	2·99	5·92	6·74	2·04	5·94	2·91	0·67	0·10	36·58
Badagri ...	Nil	4·43	1·00	2·60	5·93	11·93	18·33	1·99	5·16	7·74	0·53	Nil	59·54†
Epe ...	Nil	1·10	0·65	5·46	6·28	3·14	18·34	*	13·85	6·29	0·60	Nil	55·71
Oshogbo ...	0·05	2·65	1·13	3·38	4·16	7·80	5·13	4·02	10·36	4·05	1·80	Nil	44·53
Oyo ...	Nil	0·37	2·22	2·56	4·19	1·74	7·07	4·21	7·65	4·89	1·69	Nil	36·59
Ebute Metta ...	Nil	5·06	0·84	2·87	8·84	11·79	19·22	2·92	3·32	6·31	1·79	0·11	63·07
Abeokuta ...	Nil	0·64	2·90	4·09	5·19	6·20	9·37	4·15	6·28	5·05	0·62	Nil	44·49
Ogbomosho ...	Nil	0·44	0·09	3·96	7·91	3·21	5·08	5·56	12·60	4·70	0·16	Nil	43·71
Yaba ...	Nil	2·77	0·91	3·13	6·77	7·10	10·91	3·47	4·11	3·85	2·33	0·10	45·45
Forcados ...	Nil	7·80	5·56	10·00	20·74	30·09	49·50	41·54	47·99	25·96	4·38	0·40	243·96
Sapele ...	Nil	5·50	0·61	7·00	8·69	14·19	16·91	30·07	13·39	9·44	Nil	0·05	105·85
Benin City ...	Nil	1·60	0·50	4·96	4·53	7·84	14·60	18·35	13·29	8·14	0·12	1·08	75·01
Onitsha ...	Nil	0·42	1·05	8·39	8·79	6·20	11·97	11·18	10·46	7·18	Nil	0·10	65·74
Warri ...	Nil	2·42	4·25	6·10	8·85	9·57	17·64	32·80	19·60	10·83	0·10	Nil	112·16
Aboh ...	Nil	1·36	3·25	4·69	7·78	10·31	5·77	25·80	*	6·27	Nil	Nil	65·23†
Udi ...	0·20	0·40	3·10	5·00	10·90	13·70	*	*	*	3·99	Nil	0·03	37·32†
Okwoga ...	Nil	0·96	0·90	5·51	5·34	4·28	10·64	10·37	10·76	8·36	Nil	Nil	57·12
Asaba ...	*	0·64	0·80	5·19	7·19	6·06	*	*	9·57	5·77	Nil	Nil	35·22†
Agbor ...	0·05	2·65	1·43	4·80	8·40	11·40	15·65	8·75	12·32	6·90	Nil	Nil	72·35
Bonny ...	Nil	9·58	7·69	7·86	8·34	21·44	30·72	38·10	22·70	21·90	5·02	1·70	175·05
Calabar ...	Nil	2·71	3·23	8·19	14·17	9·00	28·15	21·35	14·86	13·49	9·53	4·16	128·84
Ikot Ekpene ...	Nil	2·58	3·26	9·71	10·84	13·31	18·57	20·74	11·38	9·62	1·49	Nil	101·50
Ikom ...	Nil	2·89	1·39	6·54	10·09	13·60	11·86	10·68	15·16	15·70	Nil	0·11	88·04
Brass ...	1·02	5·91	4·91	7·57	9·71	25·43	30·67	26·73	30·65	13·36	5·73	0·85	162·54
Degema ...	Nil	2·97	3·19	5·07	8·50	4·72	13·23	24·98	14·98	8·41	1·40	0·46	87·91
Owerri ...	Nil	2·10	1·68	10·50	8·76	6·01	7·79	18·82	13·89	6·65	Nil	0·15	76·35
Opobo ...	Nil	4·68	4·94	11·23	2·94	8·09	26·66	32·16	14·93	8·94	Nil	0·85	115·42
Afikpo ...	Nil	0·80	0·62	4·54	10·65	11·72	8·13	9·12	3·87	6·53	Nil	0·10	56·08
Akassa ...	Nil	13·37	9·01	4·33	4·86	25·79	28·48	30·55	38·04	24·05	5·51	0·42	184·41
Bende ...	Nil	0·95	1·24	2·81	1·92	4·08	11·24	17·30	9·64	10·72	Nil	*	59·90†
Obudu ...	Nil	0·16	0·56	5·17	6·50	9·00	5·68	11·52	14·75	12·09	Nil	Nil	66·43
Okigwi ...	Nil	1·38	1·92	10·97	8·68	13·36	10·31	12·63	12·52	7·11	Nil	0·26	79·14
Abakaliki ...	Nil	1·27	0·24	9·51	11·65	6·92	11·37	5·72	11·37	9·46	Nil	0·26	67·77

\* No records available.

† Records incomplete.

TABLES VI. & VII.

RETURN OF PATIENTS FOR THE YEAR 1913.

	Out-patients.	In-patients.	NUMBER ON SICK LIST.*		Total days on sick list during year.	Invalided.	Deaths.	Residents.
			Remaining from previous year.	New cases.				
EUROPEAN :—								
Officials ...	699	676	10	666	5,044	52	5	2,146
Non-Officials ...	1,079	494	20	474	5,251	54	17	1,746
Total ...	1,778	1,170	30	1,140	10,295	106	22	3,892

	Out-patients.	In-patients.	* Number on sick list.	Total days on sick list.	Invalided.	Deaths.	Residents.
NATIVE :—							
Officials ...	5,055	298	810	9,707	7	17	2,832
S. N. Regt. ...	5,785	975	2,515	12,380	1	4	2,200
Police ...	3,938	567	1,245	8,398	4	8	1,463
Paying Patients	6,253	569	844	9,180	—	39	} 7,885,091
Non-paying Patients }	47,266	4,328	7,723	279,364	—	210	
Prisoners ...	11,280	3,542	4,860	55,493	—	392	
Total ...	79,577	10,279	17,997	374,522	12	670	7,891,586

\* This number is not necessarily equal to the sum of the first and second columns. It refers to those people unable to attend duty through illness.



TABLE VII.—RETURN OF DISEASES AND DEATHS FOR THE YEAR 1913—*continued*.

DISEASES.	NATIVES.									EUROPEANS.							
	IN-PATIENTS.						OUT-PATIENTS.			OFFICIALS.					NON-OFFICIALS.		
	Remaining in Hospital at end of previous year.	Admissions.		Deaths.	Total cases.	Remaining in Hospital at end of year.	Male.	Female.	Total.	Number under treatment.	Number on sick list.	Number of days on sick list.	Invalided.	Deaths.	Number under treatment.	Invalided.	Deaths.
		Male.	Female.														
INFECTIVE DISEASES:—																	
Beri-beri ... ..	...	14	...	6	14	...	2	...	2	...	...	...	...	...	...	...	...
Cerebro-spinal fever ... ..	...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...
Chicken-pox ... ..	28	905	16	3	949	22	109	7	116	...	...	...	...	...	...	...	...
Cholera ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dengue ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dysentery ... ..	14	475	19	131	508	20	443	70	513	21	16	162	2	...	21	2	1
Endocarditis—infective ... ..	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...	...
Enteric ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
Erysipelas ... ..	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...	...
Gonorrhœa ... ..	3	173	7	...	183	11	1,621	43	1,664	16	1	2	...	...	50	...	...
Influenza ... ..	...	...	...	...	...	...	35	3	38	2	1	1	...	...	1	...	...
Kala-Azar ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Leprosy (a) Nodular ... ..	11	48	...	4	59	19	9	1	10	...	...	...	...	...	...	...	...
(b) Anæsthetic ... ..	48	9	3	5	60	43	7	1	8	...	...	...	...	...	...	...	...
Malaria (a) Tertian ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(b) Quartan ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(c) Aestivo-autumnal ... ..	12	793	36	19	841	12	4,663	761	5,424	278	243	1,327	4	...	425	15	3
(d) Chronic Malaria ... ..	...	3	...	...	3	...	18	2	20	2	...	...	2	...	2	1	...
(e) Blackwater fever ... ..	...	1	...	...	1	...	1	...	1	12	12	166	4	2	14	9	4
Measles ... ..	...	12	...	...	12	...	45	6	51	1	1	50	...	...	3	2	...
Undulant fever ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Plague ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pneumonia ... ..	6	204	7	54	217	13	85	16	101	2	2	19	...	...	1	...	...
Rabies ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Relapsing fever ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rheumatic fever ... ..	...	15	...	3	15	2	126	14	140	1	1	7	1	...	1	...	...
Septicæmia ... ..	...	15	2	5	17	...	10	2	12	...	...	...	...	...	6	...	...
Trypanosomiasis (Sleeping Sick- ness) ... ..	...	275	102	6	377	97	1	...	1	...	...	...	...	...	...	...	...
Small-pox ... ..	1	5	...	1	6	...	6	5	11	...	...	...	...	...	...	...	...
Syphilis (a) Primary ... ..	...	2	1	...	3	2	26	6	32	2	1	9	...	...	9	...	...
(b) Secondary ... ..	2	17	5	...	24	1	70	34	104	...	...	...	...	...	12	...	...
(c) Inherited ... ..	...	4	1	...	5	2	9	14	23	...	...	...	...	...	...	...	...
Tetanus ... ..	5	32	1	15	38	2	7	1	8	...	...	...	...	...	...	...	...
Tuberculosis ... ..	7	67	11	38	85	1	63	11	74	2	2	17	1	...	2	2	...
Whooping cough ... ..	...	...	...	...	...	...	13	12	25	...	...	...	...	...	...	...	...
Yaws ... ..	...	20	...	...	20	...	217	58	275	2	2	10	...	...	...	...	...
Yellow fever ... ..	...	21	...	...	21	...	...	...	...	...	...	...	...	...	*13	1	*6
Pappataci fever ... ..	...	1	...	...	1	...	1	...	1	3	3	7	...	...	2	...	...
Unclassified fevers... ..	...	46	1	2	47	...	5	...	5	2	2	24	...	...	...	...	...
Others ... ..	...	60	29	1	89	1	19	19	38	5	2	35	...	...	4	...	...
Alcoholism ... ..	...	6	...	1	6	...	6	...	6	5	5	38	1	...	9	...	...
Morphinism ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other diseases ... ..	...	...	1	...	1	..	...	...	...	1	1	31	1	...	2	...	...
GENERAL DISEASES:—																	
Dropsy ... ..	...	...	...	...	...	...	3	...	3	...	...	...	...	...	...	...	...
Anæmia ... ..	5	55	1	6	61	4	438	94	532	38	10	38	3	...	38	6	...
Anæmia—Pernicious ... ..	...	1	...	1	1	...	3	...	3	...	...	...	...	...	2	...	...
Diabetes ... ..	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...
Exophthalmic goitre ... ..	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
Gout... ..	...	...	...	...	...	...	...	...	...	2	...	7	...	...	...	...	...
Leucocythæmia ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hodgkin's disease ... ..	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
Myxœdema... ..	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...	...
Purpura ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rickets ... ..	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...	...
Scurvy ... ..	...	97	2	7	99	...	81	12	93	5	...	...	...	...	...	...	...
LOCAL DISEASES:—																	
Diseases of the Nervous System:—																	
Sub-section 1—																	
Neuritis ... ..	1	17	...	1	18	...	103	11	114	13	7	58	2	...	7	3	...
Meningitis ... ..	...	9	...	7	9	...	1	5	6	1	1	23	1	...	...	...	...
Myelitis ... ..	...	2	...	1	2	1	...	...	...	...	...	...	...	...	...	...	...
Hydrocephalus ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Encephalitis ... ..	...	1	..	1	1	...	4	...	4	...	...	...	...	...	1	...	...
Abscess of brain.. ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Congestion of brain ... ..	...	2	...	1	2	...	13	1	14	..	...	...	...	...	...	...	...
Other diseases ... ..	...	4	...	...	4	...	12	3	15	4	3	16	...	...	1	...	...

\* Of these 13 cases, 3 were Syrians with 2 deaths.

TABLE VII.—RETURN OF DISEASES AND DEATHS FOR THE YEAR 1913—*continued*.

DISEASES.	NATIVES.										EUROPEANS.							
	IN-PATIENTS.					OUT-PATIENTS.					OFFICIALS.					NON-OFFICIALS.		
	Remaining in Hospital at end of previous year.	Admissions.		Deaths.	Total cases.	Remaining in Hospital at end of year.	Male.	Female.	Total.	Number under Treatment.	Number on sick list.	Number of days on sick list.	Invalided.	Deaths.	Number under treatment.	Invalided.	Deaths.	
		Male.	Female.															
LOCAL DISEASES—continued:—																		
Diseases of the Nervous System—																		
continued:—																		
Sub-section 2—																		
Apoplexy...	1	1	...	1	2	...	1	1	2	...	...	...	...	...	...	...	...	
Paralysis...	7	30	3	9	40	3	25	...	25	...	...	...	...	...	...	...	...	
Corea...	...	...	...	...	...	...	3	...	3	...	...	...	...	...	...	...	...	
Epilepsy...	...	17	1	2	18	2	42	3	45	...	...	...	...	...	...	...	...	
Neuralgia...	2	34	...	...	36	...	1,165	157	1,322	20	3	33	...	21	...	...	...	
Hysteria...	...	...	2	...	2	...	11	4	15	1	1	3	...	1	...	...	...	
Insomnia...	...	...	...	...	...	...	...	...	...	2	2	14	3	1	...	...	...	
Syncope...	...	...	...	...	...	...	...	...	...	2	2	...	2	1	...	1	...	
Other diseases...	5	13	...	...	18	4	94	9	103	2	1	...	...	...	...	...	...	
Mental Diseases:—																		
Sub-section 3—																		
Idiocy...	4	1	...	...	5	3	2	1	3	...	...	...	...	...	...	...	...	
Mania...	23	4	2	3	29	22	1	1	2	...	...	...	...	...	...	...	...	
Melancholia...	8	2	...	1	10	7	...	...	...	...	...	...	...	...	...	...	...	
Dementia...	16	9	8	6	33	21	...	...	...	...	...	...	...	...	...	...	...	
Delusional Insanity	13	6	1	...	20	14	2	...	2	1	...	1	...	...	...	...	...	
Other diseases...	...	5	1	1	6	...	1	...	1	1	1	5	1	...	...	...	...	
Diseases of the Eye:—																		
Conjunctivitis...	2	72	2	...	76	3	1,746	319	2,065	12	2	15	...	12	...	...	...	
Keratitis...	...	6	1	...	7	...	30	2	32	2	2	10	...	1	...	...	...	
Ulceration of cornea	...	17	...	...	17	2	50	12	62	1	...	...	...	...	...	...	...	
Iritis...	2	10	...	...	12	...	35	1	36	1	...	...	...	1	...	...	...	
Optic neuritis...	...	1	...	...	1	...	2	...	2	...	...	...	...	...	...	...	...	
Cataract...	5	16	8	...	29	...	12	3	15	...	...	...	...	...	...	...	...	
Other diseases...	1	16	2	...	19	...	80	13	93	9	1	5	1	2	...	...	...	
Diseases of the Ear:—																		
Inflammation...	1	13	...	...	14	...	969	321	1,290	10	2	10	...	13	...	...	...	
Other diseases...	...	5	1	...	6	...	224	63	287	21	1	1	...	8	...	...	...	
Diseases of the Nose...																		
Diseases of the Circulatory System:—																		
Pericarditis...	...	9	...	6	9	1	5	...	5	...	...	...	...	...	...	...	...	
Endocarditis...	...	7	...	5	7	...	4	1	5	2	2	2	...	1	...	...	...	
Valvular Mitral	6	104	4	39	114	3	231	17	248	3	3	38	1	3	1	...	...	
Aortic...	1	12	1	6	14	1	15	1	16	1	1	15	...	...	...	...	...	
Tricuspid...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Pulmonary...	...	1	...	1	1	...	1	...	1	1	...	...	...	...	...	...	...	
Arterial Sclerosis	...	3	...	2	3	1	9	...	9	1	1	8	...	...	...	...	...	
Aneurism...	...	23	...	5	23	...	9	...	9	1	...	...	...	1	...	...	...	
Diseases of the Respiratory System:—																		
Laryngitis...	1	5	...	...	6	1	1,362	110	1,472	16	3	14	...	4	...	...	...	
Bronchitis...	18	248	12	14	278	26	4,734	1,132	5,866	49	12	49	...	40	...	...	...	
Broncho-pneumonia	...	27	2	11	29	2	39	11	50	...	...	...	...	1	...	...	...	
Abscess of lung	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	
Gangrene of lung	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	
Emphysema	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Pleurisy...	10	77	...	5	87	11	174	10	184	1	1	6	...	4	...	...	...	
Empyema...	...	3	...	2	3	...	...	...	...	...	...	...	...	...	...	...	...	
Other diseases	1	5	...	...	6	...	38	8	46	2	...	...	...	4	...	...	...	
Diseases of the Digestive System:—																		
Stomatitis...	1	10	1	...	12	1	350	121	471	4	1	6	...	16	...	...	...	
Caries of teeth	...	5	1	...	6	...	763	196	959	4	1	1	...	19	...	...	...	
Glossitis...	...	3	...	...	3	...	63	6	69	1	...	...	...	2	...	...	...	
Sore throat...	1	5	...	...	6	...	109	28	137	4	2	9	...	5	...	...	...	
Inflammation of tonsils	1	6	1	...	8	...	204	38	242	21	10	43	...	12	...	...	...	
Gastritis...	4	75	4	1	83	3	465	79	544	83	50	202	3	42	3	...	...	
Ulceration of stomach	...	...	...	...	...	...	1	1	2	2	2	29	1	...	...	...	...	
Hæmatemesis	...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	
Dilatation of stomach	...	...	...	...	...	...	...	...	...	1	1	10	...	...	...	...	...	
Stricture of stomach	...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	
Dyspepsia...	...	30	...	...	30	...	945	204	1,149	68	8	35	...	57	1	...	...	
Enteritis...	1	8	1	3	10	1	51	5	56	15	11	56	1	7	...	...	...	
Appendicitis	...	4	...	1	4	...	1	1	2	6	5	46	3	5	...	...	1	
Colitis...	...	15	...	1	15	...	18	1	19	5	5	29	...	4	...	...	...	
Ulceration of intestines	...	1	...	1	1	...	2	...	2	...	...	...	...	...	...	...	...	
Sprue...	...	2	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	



TABLE VII.—RETURN OF DISEASES AND DEATHS FOR THE YEAR 1913—*continued.*

DISEASES.	NATIVES.									EUROPEANS.								
	IN-PATIENTS.						OUT-PATIENTS.			OFFICIALS.						NON-OFFICIALS.		
	Remaining in Hospital at end of previous year.	Admissions.		Deaths.	Total cases.	Remaining in Hospital at end of year.	Male.	Female.	Total.	Number under Treatment.	Number on sick list.	Number of days on sick list.	Invalided.	Deaths.	Number under treatment.	Invalided.	Deaths.	
		Male.	Female.															
LOCAL DISEASES—continued:—																		
Diseases of the Digestive System—																		
continued:—																		
Hernia ... ..	7	171	1	11	179	12	218	2	220	2	2	37	...	...	1	...	...	
Diarrhœa ... ..	18	849	13	79	880	14	1,845	265	2,110	52	18	143	...	...	60	...	...	
Constipation ... ..	...	65	2	...	67	...	6,402	858	7,260	59	2	2	...	...	52	...	...	
Colic... ..	...	108	9	...	117	...	1,049	165	1,214	17	7	22	...	...	8	...	...	
Hæmorrhoids ... ..	5	21	6	...	32	8	160	19	179	12	4	69	...	...	10	...	...	
Pancreatitis ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Hepatitis—acute ... ..	...	15	2	1	17	...	44	7	51	13	5	41	2	...	14	1	...	
Abscess ... ..	1	11	1	1	13	1	68	6	74	3	3	49	1	1	...	...	...	
Cirrhosis ... ..	...	6	1	4	7	...	1	1	2	...	...	...	...	...	...	...	...	
Jaundice ... ..	...	7	2	1	9	...	10	1	11	2	2	25	...	...	6	...	...	
Peritonitis ... ..	1	8	4	8	13	...	13	2	15	...	...	...	...	...	...	...	...	
Ascites ... ..	...	35	3	4	38	2	17	3	20	...	...	...	...	...	...	...	...	
Other diseases ... ..	...	16	3	5	19	2	39	5	44	5	1	3	...	...	8	...	...	
Diseases of the Lymphatic System:—																		
Splenitis ... ..	1	8	4	...	13	...	239	100	339	3	3	41	...	...	1	...	...	
Inflammation of lymphatic gland	9	319	19	2	347	10	657	55	712	35	29	613	1	...	29	...	...	
Suppuration of lymphatic gland...	5	56	3	...	64	1	143	9	152	7	3	101	1	...	3	...	...	
Lymphangitis ... ..	...	13	...	...	13	...	61	2	63	5	2	18	...	...	2	...	...	
Elephantiasis ... ..	1	24	1	...	26	2	17	2	19	...	...	...	...	...	...	...	...	
Diseases of the Urinary System:—																		
Acute nephritis ... ..	...	31	2	6	33	1	32	2	34	2	2	15	...	...	1	...	...	
Bright's disease ... ..	1	15	3	3	19	...	10	2	12	...	...	...	...	...	1	1	...	
Pyelitis ... ..	...	2	...	...	2	...	2	...	2	...	...	...	...	...	...	...	...	
Calculus ... ..	...	...	...	...	...	...	...	...	...	1	1	17	1	...	2	...	...	
Renal colic ... ..	...	...	...	...	...	...	...	...	...	2	2	9	...	...	...	...	...	
Cystitis ... ..	...	16	2	2	18	...	33	13	46	8	6	136	1	...	6	...	...	
Vesical calculus ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Suppression... ..	...	4	...	1	4	...	1	...	1	...	...	...	...	...	1	...	...	
Hæmaturia ... ..	...	5	...	...	5	1	8	1	9	1	...	...	...	...	1	...	...	
Chyluria ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Other diseases ... ..	...	5	1	2	6	...	6	2	8	2	1	8	...	...	...	...	...	
Diseases of the Generative System:—																		
Male Organs:—																		
Urethritis ... ..	...	9	...	...	9	...	42	2	44	6	...	...	...	...	18	...	...	
Gleet ... ..	...	2	...	...	2	...	13	...	13	...	...	...	...	...	4	...	...	
Stricture ... ..	4	59	...	3	63	1	60	...	60	...	...	...	...	...	2	...	...	
Prostatitis ... ..	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	
Soft chancre ... ..	2	16	...	...	18	2	122	4	126	3	...	...	...	...	12	...	...	
Condyloma ... ..	2	1	...	...	3	...	4	...	4	...	...	...	...	...	...	...	...	
Inflammation of scrotum ... ..	...	...	...	...	...	...	16	...	16	...	...	...	...	...	...	...	...	
Hydrocele ... ..	2	46	...	1	48	3	77	...	77	...	...	...	...	...	...	...	...	
Orchitis ... ..	1	52	...	...	53	4	169	...	169	3	3	18	...	...	3	...	...	
Epididymitis ... ..	...	12	...	...	12	...	37	...	37	...	...	...	...	...	1	...	...	
Abscess of testicle ... ..	...	1	...	...	1	...	5	...	5	...	...	...	...	...	...	...	...	
Other diseases ... ..	1	38	...	...	39	1	34	...	34	2	1	16	...	...	5	...	...	
Female Organs:—																		
Ovaritis ... ..	...	...	2	...	2	...	...	6	6	...	...	...	...	...	...	...	...	
Ovarian cyst ... ..	1	...	3	...	4	...	...	2	2	...	...	...	...	...	...	...	...	
Endometritis ... ..	...	...	8	...	8	...	...	21	21	...	...	...	...	...	...	...	...	
Displacement of uterus...	...	...	8	...	8	...	...	2	2	...	...	...	...	...	...	...	...	
Vaginitis... ..	...	...	2	...	2	...	...	14	14	...	...	...	...	...	...	...	...	
Amenorrhœa ... ..	...	...	...	...	...	...	...	27	27	...	...	...	...	...	...	...	...	
Dysmenorrhœa ... ..	...	...	1	...	1	...	...	88	88	...	...	...	...	...	...	...	...	
Menorrhagia ... ..	...	...	1	...	1	...	...	16	16	...	...	...	...	...	...	...	...	
Leucorrhœa ... ..	...	...	...	...	...	...	...	16	16	...	...	...	...	...	...	...	...	
Abortion ... ..	...	...	10	...	10	...	...	17	17	...	...	...	...	...	1	...	...	
Delayed labour ... ..	...	...	9	2	9	...	...	3	3	...	...	...	...	...	...	...	...	
Post-partum hæmorrhage ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Retained placenta ... ..	...	...	5	1	5	...	...	3	3	...	...	...	...	...	...	...	...	
Premature birth... ..	...	...	1	...	1	...	...	2	2	...	...	...	...	...	...	...	...	
Puerperal septicæmia ... ..	...	...	1	1	1	...	...	2	2	...	...	...	...	...	...	...	...	
Mastitis ... ..	...	...	3	...	3	...	...	40	40	...	...	...	...	...	...	...	...	
Abscess of breast ... ..	...	...	2	...	2	...	...	7	7	...	...	...	...	...	...	...	...	
Other diseases ... ..	...	...	20	1	20	1	...	20	20	...	...	...	...	...	...	...	...	

TABLE VII.—RETURN OF DISEASES AND DEATHS FOR THE YEAR 1913—*continued.*

DISEASES.	NATIVES.									EUROPEANS.							
	IN-PATIENTS.						OUT-PATIENTS.			OFFICIALS.					NON-OFFICIALS.		
	Remaining in Hospital at end of previous year.	Admissions.		Deaths.	Total cases.	Remaining in Hospital at end of year.	Male.	Female.	Total.	Number under treatment.	Number on sick list.	Number of days on sick list.	Invalided.	Deaths.	Number under treatment.	Invalided.	Deaths.
		Male.	Female.														
LOCAL DISEASES—continued:—																	
Diseases of Organs of Locomotion:—																	
Osteitis ... ..	1	31	9	1	41	1	113	14	127	2	1	3	...	...	2	...	...
Arthritis ... ..	22	312	10	3	344	25	5,054	679	5,733	54	30	223	4	...	52	2	...
Spondylitis ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bursitis ... ..	...	17	...	...	17	...	99	2	101	...	...	...	...	...	4	...	...
Ainhum ... ..	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
Other diseases ... ..	...	21	2	...	23	...	155	21	176	3	...	...	...	...	3	...	...
Diseases of Connective Tissue:—																	
Cellulitis ... ..	3	173	3	1	179	5	773	106	879	9	9	32	...	...	8	...	...
Abscess ... ..	21	427	20	7	468	17	133	183	1,316	15	18	89	...	...	33	...	...
Elephantiasis ... ..	3	19	...	...	22	2	16	...	16	...	...	...	...	...	...	...	...
Other diseases ... ..	...	8	...	...	8	...	21	...	21	...	...	...	...	...	...	...	...
Diseases of the Skin:—																	
Urticaria ... ..	...	2	1	...	3	...	77	10	87	5	2	11	...	...	4	...	...
Eczema ... ..	1	34	1	...	36	...	1,400	247	1,647	25	2	7	...	...	36	...	...
Boil ... ..	...	33	...	...	33	...	807	50	857	35	9	34	...	...	36	...	...
Carbuncle ... ..	...	2	...	...	2	...	12	1	13	1	1	13	...	...	...	...	...
Herpes ... ..	...	1	...	...	1	...	23	5	28	5	3	22	...	...	...	...	...
Psoriasis ... ..	...	...	...	...	...	...	7	1	8	1	...	...	...	...	...	...	...
Oriental sore ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tinea ... ..	1	13	...	...	14	...	1,780	192	1,972	28	1	7	...	...	32	...	...
Scabies ... ..	...	16	2	...	18	...	1,667	267	1,934	6	1	...	...	...	19	...	...
Acne... ..	...	...	...	...	...	...	9	3	12	2	...	...	...	...	6	...	...
Prickly heat ... ..	...	...	...	...	...	...	24	2	26	5	1	1	...	...	6	...	...
Ulcers ... ..	22	336	33	4	391	17	6,647	1,423	8,070	16	8	62	...	...	38	...	...
Other diseases ... ..	3	33	1	3	37	1	294	37	331	5	2	56	...	...	15	...	...
INJURIES:—																	
General ... ..	...	30	13	10	43	...	2,610	194	2,804	35	13	71	1	...	7	...	...
Local ... ..	33	862	70	29	965	39	9,679	773	10,452	57	21	288	1	...	80	2	...
*Surgical Operations ... ..	...	(402)	(97)	(9)	(499)	(21)	(137)	(15)	(152)	(10)	...	...	...	(1)	(10)	...	(1)
Tumours ... ..	3	49	25	4	77	1	109	32	141	2	...	...	...	...	7	1	1
Malformations ... ..	...	4	...	...	4	...	6	3	9	...	...	...	...	...	...	...	...
Poisons ... ..	...	8	...	1	8	...	28	3	31	...	...	...	...	...	1	...	...
Scorpion sting ... ..	...	...	...	...	...	...	6	...	6	...	...	...	...	...	...	...	...
Parasites—Animal ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Protozoa ... ..	...	...	...	...	...	...	8	3	11	...	...	...	...	...	...	...	...
Trematoda (Flukes) ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other parasites ... ..	...	...	...	...	...	...	3	...	3	1	...	...	...	...	...	...	...
Cestoda—																	
Tænia Solium... ..	...	8	...	...	8	...	69	10	79	2	...	...	...	...	4	...	...
Tænia Saginata ... ..	...	2	...	...	2	...	11	5	16	...	...	...	...	...	...	...	...
Nematoda—																	
Ascaris... ..	...	38	1	...	39	...	1,264	610	1,874	...	...	...	...	...	...	...	...
Trichocephalus dispar... ..	...	2	...	...	2	...	5	7	12	...	...	...	...	...	...	...	...
Trichina ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dracunculus ... ..	15	132	1	1	148	13	418	24	442	...	...	...	...	...	...	...	...
Filariasis ... ..	1	10	...	...	11	...	45	6	51	1	...	...	...	...	...	...	...
Strongylus ... ..	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...	...
Ankylostomiasis ... ..	5	90	...	17	95	2	117	...	117	...	...	...	...	...	...	...	...
Oxyuris ... ..	...	...	...	...	...	...	19	4	23	...	...	...	...	...	...	...	...
Other nematodis ... ..	...	2	...	2	2	...	12	8	20	1	...	...	...	...	2	...	...
Insecta—																	
Myiasis ... ..	...	2	...	...	2	...	8	3	11	2	4	...	...	...	1	...	...
Other insects ... ..	...	1	...	...	1	...	8	10	18	1	...	...	...	...	1	...	...
TOTAL ... ..	474	9,150	655	670	10,279	574	68,716	10,561	79,577	1,375	676	5,044	52	5	1,573	54	17

\* Surgical operations are not included in the Total of Diseases; all such cases are recorded against their respective diseases.



TABLE VIII.

## ANNUAL RETURNS OF ANTI-MOSQUITO WORK.

	Houses inspected.	Number of houses with larvæ.	Number of receptacles with larvæ.	Rainfall, 1913.	Mosquito index, 1913.	Mosquito index, 1912.	Mosquito index, 1911.
Lagos and Ebute-Metta	533,679	20,043	23,149	61·86	3·7	5·4	13·1
Aro ... ..	10,966	116	211	44·49	1·28	5·4	48·0
Epe ... ..	14,109	820	1,175	55·71	5·8	13·25	—
Badagry ... ..	13,471	282	409	59·54	2·08	3·72	11·0
Ibadan I. ... ..	13,811	1,005	1,529	49·19	7·27	1·75	3·72
Ibadan II. ... ..	47,752	9,269	20,239	49·19	19·33	12·33	—
Oshogbo ... ..	10,267	1,533	2,246	44·53	14·9	9·79	—
Warri ... ..	39,842	136	136	112·16	0·35	0·34	0·7
Forcados ... ..	31,008	175	223	243·96	0·63	0·98	2·4
Sapele ... ..	7,379	104	223	105·85	1·43	1·39	1·4
Benin City ... ..	6,558	332	564	75·01	6·06	15·43	10·7
Agbor ... ..	5,733	11	11	72·35	0·18	4·35	36·2
Onitsha ... ..	12,800	76	76	67·74	0·5	0·29	14·0
Aboh ... ..	1,934	136	299	65·23	6·5	6·24	34·1
Asaba ... ..	19,404	262	281	35·22	1·36	11·67	—
Awka ... ..	1,442	124	162	—	8·5	3·1	—
Koko ... ..	1,762	36	48	—	1·96	1·57	—
Okwoga ... ..	5,588	7	7	57·12	0·12	0·1	—
Udi ... ..	378	13	15	37·32	3·97	3·62	—
Calabar ... ..	120,948	693	786	128·84	0·54	1·32	3·8
Opobo ... ..	10,924	224	183	115·42	1·55	1·56	2·6
Bonny ... ..	3,827	399	430	175·05	10·8	6·84	7·8
Degema ... ..	26,276	163	265	87·91	0·61	3·02	5·8
Brass ... ..	9,169	31	51	162·54	0·45	1·48	6·4
Owerri ... ..	5,881	240	317	76·35	4·3	4·2	9·4
Okigwi ... ..	8,300	2	2	79·14	0·02	0·34	1·2
Itu ... ..	6,666	113	114	—	1·78	9·51	24·1
Abakaliki ... ..	4,273	26	26	67·77	0·5	0·97	0·4
Ikom Obubra ... ..	4,439	143	152	88·04	3·95	2·18	16·1
Bende ... ..	1,717	72	132	59·9	4·7	15·8	—
Afikpo ... ..	7,750	583	819	56·08	7·74	7·51	—
Eket ... ..	—	—	—	—	—	53·4	—
Ikot Ekpene ... ..	6,943	59	80	101·5	0·84	2·79	—
Obudu ... ..	2,017	20	22	66·43	1·12	7·5	—
Ogoja ... ..	1,626	6	8	—	0·27	—	—

## PROVINCIAL ANNUAL RETURNS OF ANTI-MOSQUITO WORK.

	Houses inspected.	Number of houses with larvæ.	Number of receptacles with larvæ.	Mosquito index, 1913.	Mosquito index, 1912.
WESTERN PROVINCE (excluding Lagos) ... ..	110,376	13,025	25,899	11·80	8·13
WESTERN PROVINCE ... ..	644,055	33,068	49,048	5·28	5·86
CENTRAL PROVINCE ... ..	133,828	1,412	2,035	1·10	2·43
EASTERN PROVINCE ... ..	220,756	2,774	3,387	1·25	3·42
GRAND TOTAL ... ..	998,639	37,254	54,470	3·77	5·06

TABLE VIII.—ANNUAL MOSQUITO RETURNS.—*continued.*  
Results of Work during the Four Quarters of the Year 1913.

	Houses Inspected.	Number of Houses with Larvæ	Number of Receptacles with Larvæ.	Mosquito Index 1913.	Mosquito Index 1912.	Rainfall 1913.	Rainfall 1912.
WESTERN PROVINCE.							
LAGOS AND EBUTE-METTA.							
1st Quarter ... ..	129,652	3,221	3,470	2·4	9·7	4·03	2·71
2nd „ ... ..	131,807	5,811	6,909	4·4	4·9	27·73	22·86
3rd „ ... ..	131,772	5,730	6,786	4·3	4·4	23·45	9·82
4th „ ... ..	140,448	5,281	5,984	3·7	2·8	5·44	5·11
TOTAL ...	533,679	20,043	23,149	3·7	5·4	60·65	40·50
ARO.							
1st Quarter ... ..	3,305	2	5	0·06	...	3·54	0·95
2nd „ ... ..	3,452	8	15	0·23	...	16·48	17·93
3rd „ ... ..	953	18	32	2·16	6·21	19·7	9·19
4th „ ... ..	3,256	88	159	2·70	1·56	5·67	3·65
TOTAL ...	10,966	116	211	1·28	3·7	45·39	31·72
EPE.							
1st Quarter ... ..	3,216	254	334	7·8	...	1·75	1·77
2nd „ ... ..	3,366	211	345	6·2	22·18	14·88	25·66
3rd „ ... ..	3,873	161	254	4·1	12·98	32·09	23·37
4th „ ... ..	3,654	194	242	5·30	9·67	6·89	13·89
TOTAL ...	14,109	820	1,175	5·8	13·25	55·73	64·69
BADAGRY.							
1st Quarter ... ..	6,812	133	165	1·9	2·01	5·43	0·65
2nd „ ... ..	4,292	101	183	2·35	3·39	20·46	19·68
3rd „ ... ..	1,156	33	44	2·85	5·03	25·38	11·12
4th „ ... ..	1,211	15	17	1·23	4·99	8·27	3·34
TOTAL ...	13,471	282	409	2·08	3·27	59·54	34·79
IBADAN I.							
1st Quarter ... ..	4,308	159	281	3·6	3·50	0·85	1·63
2nd „ ... ..	4,801	483	780	10·00	3·06	7·86	16·84
3rd „ ... ..	2,243	184	260	8·2	1·39	34·58	6·81
4th „ ... ..	2,459	179	208	7·27	1·06	5·9	2·58
TOTAL ...	13,811	1,005	1,529	7·27	1·75	40·29	27·86
IBADAN II.							
1st Quarter ... ..	11,753	2,032	3,588	17·2	23·43	No record	1·63
2nd „ ... ..	11,373	2,365	5,229	20·7	6·50		16·84
3rd „ ... ..	12,648	3,094	7,852	24·6	9·33		6·81
4th „ ... ..	11,978	1,778	3,660	14·84	15·73		2·58
TOTAL ...	47,752	9,269	20,329	19·33	12·33		27·86
OSHOGBO.							
1st Quarter ... ..	2,425	292	435	12·04	...	3·83	2·10
2nd „ ... ..	2,587	409	652	15·9	8·6	15·34	14·89
3rd „ ... ..	2,636	454	644	17·2	9·2	19·51	12·63
4th „ ... ..	2,619	378	515	14·4	10·4	5·85	10·03
TOTAL ...	10,267	1,533	2,246	14·9	9·79	44·53	39·65



TABLE VIII.—ANNUAL MOSQUITO RETURNS—*continued*.

Results of Work during the Four Quarters of the Year 1913.

	Houses Inspected.	Number of Houses with Larvæ.	Number of Receptacles with Larvæ.	Mosquito Index 1913.	Mosquito Index 1912.	Rainfall 1913.	Rainfall 1912.
CENTRAL PROVINCE.							
WARRI.							
1st Quarter ... ..	12,442	29	29	0·23	0·21	6·67	7·27
2nd „ ... ..	8,889	46	46	0·51	0·48	24·52	31·06
3rd „ ... ..	8,711	38	38	0·43	0·45	70·04	51·84
4th „ ... ..	9,440	23	23	0·24	0·23	10·93	20·20
TOTAL ...	39,482	136	136	0·35	0·34	112·16	110·37
FORCADOS.							
1st Quarter ... ..	4,151	45	52	1·08	1·33	13·36	12·80
2nd „ ... ..	5,134	28	36	0·54	2·22	61·64	51·47
3rd „ ... ..	10,959	55	61	0·50	0·55	139·03	61·07
4th „ ... ..	10,764	47	74	0·43	0·56	30·70	44·92
TOTAL ...	31,008	175	223	0·63	0·98	244·73	170·26
SAPELE.							
1st Quarter ... ..	1,801	8	10	0·4	0·74	6·11	3·25
2nd „ ... ..	1,646	10	16	0·60	1·62	29·88	41·23
3rd „ ... ..	1,747	71	179	4·06	1·45	60·07	38·24
4th „ ... ..	2,185	15	18	0·68	2·04	9·49	13·98
TOTAL ...	7,379	104	223	1·43	1·39	105·88	96·70
BENIN CITY.							
1st Quarter ... ..	1,130	143	291	12·6	38·8	2·11	6·71
2nd „ ... ..	1,384	105	156	7·5	42·55	17·35	31·53
3rd „ ... ..	1,832	38	38	2·07	10·64	46·24	29·22
4th „ ... ..	2,212	46	79	2·07	8·12	9·34	10·80
TOTAL ...	6,558	332	564	6·06	15·43	75·04	78·26
AGBOR.							
1st Quarter ... ..	1,295	1	1	0·07	6·24	4·13	...
2nd „ ... ..	1,264	4	4	0·31	2·59	24·6	...
3rd „ ... ..	1,512	4	4	0·26	3·23	36·72	34·51
4th „ ... ..	1,662	2	2	0·1	2·18	6·9	11·30
TOTAL ...	5,733	11	11	0·18	4·35	72·35	17·26
ONITSHA.							
1st Quarter ... ..	1,891	4	4	0·2	0·19	1·47	3·62
2nd „ ... ..	2,668	25	25	0·9	0·52	23·38	18·56
3rd „ ... ..	3,476	29	29	0·84	0·35	33·61	31·57
4th „ ... ..	4,765	18	18	0·3	...	7·28	7·70
TOTAL ...	12,800	76	76	0·5	0·29	65·74	61·45
ABOH.							
1st Quarter ... ..	455	14	20	3·09	4·18	4·61	2·54
2nd „ ... ..	462	44	84	9·52	5·07	22·78	28·67
3rd „ ... ..	728	66	174	9·3	12·7	31·57	52·59
4th „ ... ..	289	12	21	4·1	5·6	10·93	19·37
TOTAL ...	1,934	136	299	6·5	6·24	89·89	103·37

TABLE VIII.—ANNUAL MOSQUITO RETURNS—*continued*.  
Results of Work During the Four Quarters of the Year 1913.

	Houses Inspected.	Number of Houses with Larvæ.	Number of Receptacles with Larvæ.	Mosquito Index 1913.	Mosquito Index 1912.	Rainfall 1913.	Rainfall 1912.
<b>CENTRAL PROVINCE—</b> <i>continued.</i>							
<b>ASABA.</b>							
1st Quarter ... ..	5,680	88	95	1·5	...	1·42	4·46
2nd „ ... ..	3,670	72	79	1·9	23·6	18·46	20·29
3rd „ ... ..	4,919	73	78	1·40	24·15	9·57	35·41
4th „ ... ..	5,135	29	29	0·56	7·5	5·77	7·19
TOTAL ...	19,404	262	281	1·35	11·67	35·22	67·35
<b>AWKA.</b>							
1st Quarter ... ..	470	6	15	1·2	...	No record.	No record.
2nd „ ... ..	125	55	62	44·00	...	No record.	No record.
3rd „ ... ..	440	57	75	12·9	2·02	No record.	No record.
4th „ ... ..	407	6	10	1·4	4·99	No record.	No record.
TOTAL ...	1,442	124	162	8·5	3·1	...	...
<b>KOKO.</b>							
1st Quarter ... ..	310	4	5	1·2	...	No record.	No record.
2nd „ ... ..	383	8	12	2·08	3·48	No record.	No record.
3rd „ ... ..	505	13	13	2·57	1·15	No record.	No record.
4th „ ... ..	564	11	18	1·95	0·90	No record.	No record.
TOTAL ...	1,762	36	48	1·96	1·57	...	...
<b>OKWOGA.</b>							
1st Quarter ... ..	1,388	...	...	...	...	1·86	4·89
2nd „ ... ..	2,125	...	...	...	...	15·13	20·66
3rd „ ... ..	676	...	...	...	...	31·77	23·73
4th „ ... ..	1,399	7	7	0·50	0·10	8·36	4·81
TOTAL ...	5,588	7	7	0·12	0·10	57·13	54·09
<b>UDI.</b>							
1st Quarter ... ..	129	4	6	3·1	0·54	3·7	3·00
2nd „ ... ..	70	9	9	12·8	7·14	29·6	17·14
3rd „ ... ..	46	...	...	...	3·5	...	26·03
4th „ ... ..	133	...	...	...	2·92	4·02	12·55
TOTAL ...	378	13	15	3·97	3·62	37·22	58·72
<b>EASTERN PROVINCE.</b>							
<b>CALABAR.</b>							
1st Quarter ... ..	26,803	69	69	0·25	1·3	5·94	3·23
2nd „ ... ..	31,270	205	226	0·65	1·08	31·36	31·05
3rd „ ... ..	31,361	280	326	0·86	2·3	64·36	41·75
4th „ ... ..	31,514	139	165	0·4	0·89	27·18	19·07
TOTAL ...	120,948	693	786	0·54	1·32	128·84	95·10
<b>OPOBO.</b>							
1st Quarter ... ..	1,720	31	33	1·7	0·73	9·62	16·74
2nd „ ... ..	3,068	150	102	3·3	1·38	22·26	42·83
3rd „ ... ..	3,068	38	43	1·04	1·52	73·75	66·41
4th „ ... ..	3,068	5	5	0·16	3·3	9·79	14·83
TOTAL ...	10,924	224	183	1·55	1·56	115·42	140·81



TABLE VIII.—ANNUAL MOSQUITO RETURNS—*continued*.  
Results of Work during the Four Quarters of the Year 1912.

	Houses Inspected.	Number of Houses with Larvæ.	Number of Receptacles with Larvæ.	Mosquito Index. 1913.	Mosquito Index 1912.	Rainfall 1913.	Rainfall 1912.
<b>EASTERN PROVINCE—<i>continued</i>.</b>							
<b>BONNY.</b>							
1st Quarter ... ..	405	47	48	11·6	4·6	17·27	11·85
2nd „ ... ..	1,495	132	147	8·8	5·2	37·64	68·50
3rd „ ... ..	1,173	126	134	10·6	8·7	91·52	71·24
4th „ ... ..	754	94	101	12·4	14·5	28·62	26·82
TOTAL ...	3,827	399	430	10·8	6·84	175·05	178·41
<b>DEGEMA.</b>							
1st Quarter ... ..	6,671	62	87	0·92	5·5	6·16	3·75
2nd „ ... ..	6,857	49	91	0·71	2·26	18·29	23·43
3rd „ ... ..	6,483	36	58	0·55	4·24	53·19	31·82
4th „ ... ..	6,265	16	29	0·25	1·34	10·27	12·37
TOTAL ...	26,276	163	265	0·61	3·02	87·91	71·35
<b>BRASS.</b>							
1st Quarter ... ..	2,202	26	26	1·18	1·19	11·84	7·91
2nd „ ... ..	2,596	11	11	0·42	1·5	42·71	54·98
3rd „ ... ..	2,092	9	9	0·004	1·8	88·05	60·76
4th „ ... ..	2,279	5	5	0·21	1·9	19·94	17·15
TOTAL ...	9,169	51	51	0·45	1·48	162·54	140·8
<b>OWERRI.</b>							
1st Quarter ... ..	2,037	61	86	2·9	0·8	3·78	7·93
2nd „ ... ..	1,642	45	58	2·7	4·1	25·27	30·76
3rd „ ... ..	1,286	94	113	7·3	7·28	40·5	34·35
4th „ ... ..	916	40	60	4·3	3·1	6·8	11·24
TOTAL ...	5,881	240	317	4·3	4·2	76·35	84·46
<b>OKIGWI.</b>							
1st Quarter ... ..	1,826	2	2	0·10	0·105	3·30	No record
2nd „ ... ..	2,158	...	...	...	0·72	32·91	
3rd „ ... ..	2,158	...	...	...	0·29	35·46	
4th „ ... ..	2,158	...	...	...	0·25	7·37	
TOTAL ...	8,300	2	2	0·02	0·34	79·04	...
<b>ITU.</b>							
1st Quarter ... ..	1,723	29	30	1·68	...	3·7	No record
2nd „ ... ..	1,428	53	53	3·71	14·3	29·6	
3rd „ ... ..	1,836	19	19	1·03	11·95	...	
4th „ ... ..	1,679	12	12	0·71	6·03	4·02	
TOTAL ...	6,666	113	114	1·78	9·51	37·32	...
<b>ABAKALIKI.</b>							
1st Quarter ... ..	1,250	6	6	0·48	1·02	1·51	No record
2nd „ ... ..	1,317	14	14	1·05	1·5	28·08	
3rd „ ... ..	506	...	...	...	0·7	28·46	
4th „ ... ..	1,200	6	6	0·5	0·56	9·72	
TOTAL ...	4,273	26	26	0·50	0·97	67·77	...

TABLE VIII.—ANNUAL MOSQUITO RETURNS—*continued.*

Results of Work during the Four Quarters of the Year 1913.

	Houses Inspected.	Number of Houses with Larvæ.	Number of Receptacles with Larvæ.	Mosquito Index 1913.	Mosquito Index 1912.	Rainfall 1913.	Rainfall 1912.
<b>EASTERN PROVINCE— <i>continued.</i></b>							
<b>IKOM.</b>							
1st Quarter ... ..	650	15	17	2·3	0·58	4·28	4·27
2nd „ ... ..	529	15	15	2·8	2·5	30·23	17·37
3rd „ ... ..	970	30	30	3·08	5·70	37·72	29·05
4th „ ... ..	784	10	10	1·2	1·37	15·81	9·77
<b>TOTAL ...</b>	<b>2,933</b>	<b>70</b>	<b>72</b>	<b>2·34</b>	<b>2·18</b>	<b>88·04</b>	<b>60·46</b>
<b>OBUBRA.</b>							
1st Quarter ... ..	551	16	16	2·9	No record.	No record.	No record.
2nd „ ... ..	537	34	34	5·0			
3rd „ ... ..	215	23	23	10·7			
4th „ ... ..	203	7	7	3·4			
<b>TOTAL ...</b>	<b>1,506</b>	<b>80</b>	<b>80</b>	<b>5·56</b>			
<b>BENDE.</b>							
1st Quarter ... ..	322	9	11	2·7	14·7	11·84	4·22
2nd „ ... ..	464	17	40	3·6	15·5	42·71	32·85
3rd „ ... ..	321	36	60	11·2	22·07	88·05	45·80
4th „ ... ..	610	10	21	1·6	6·8	19·94	0·52
<b>TOTAL ...</b>	<b>1,717</b>	<b>72</b>	<b>132</b>	<b>4·7</b>	<b>15·8</b>	<b>162·54</b>	<b>92·39</b>
<b>AFIKPO.</b>							
1st Quarter ... ..	2,200	62	80	2·8	0·19	1·42	2·89
2nd „ ... ..	2,400	185	259	7·7	7·8	26·91	16·32
3rd „ ... ..	1,950	233	360	11·9	8·4	21·12	25·17
4th „ ... ..	1,200	103	120	8·58	11·6	6·63	5·01
<b>TOTAL ...</b>	<b>7,750</b>	<b>583</b>	<b>819</b>	<b>7·52</b>	<b>7·51</b>	<b>56·08</b>	<b>49·39</b>
<b>EKET.</b>							
1st Quarter ... ..	780	222	282	29·0	...	No record.	No record.
2nd „ ... ..	780	124	185	15·7	...		
3rd „ ... ..	219	18	22	8·2	...		
4th „ ... ..	...	...	...	...	53·4		
<b>TOTAL ...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>53·4</b>		
<b>IKOT-EKPENE.</b>							
1st Quarter ... ..	1,050	4	4	0·38	0·74	5·84	6·13
2nd „ ... ..	2,240	13	16	0·58	5·46	33·86	23·04
3rd „ ... ..	2,063	16	17	0·77	3·83	50·69	53·32
4th „ ... ..	1,590	26	43	1·62	1·31	11·11	12·30
<b>TOTAL ...</b>	<b>6,943</b>	<b>59</b>	<b>80</b>	<b>0·84</b>	<b>2·79</b>	<b>101·5</b>	<b>94·79</b>
<b>OBUDU.</b>							
1st Quarter ... ..	817	3	3	0·3	11·2	0·72	...
2nd „ ... ..	432	9	10	2·08	8·5	20·67	...
3rd „ ... ..	458	4	5	0·80	18·04	31·95	...
4th „ ... ..	310	4	4	1·3	1·97	12·09	...
<b>TOTAL ...</b>	<b>2,017</b>	<b>20</b>	<b>22</b>	<b>1·12</b>	<b>7·5</b>	<b>65·43</b>	<b>...</b>
<b>OGOJA.</b>							
1st Quarter ... ..	305	...	...	...	No record.	No record.	No record.
2nd „ ... ..	395	...	...	...			
3rd „ ... ..	418	...	...	...			
4th „ ... ..	508	6	8	1·1			
<b>TOTAL ...</b>	<b>1,626</b>	<b>6</b>	<b>8</b>	<b>0·27</b>			



**TABLE IX.**  
**TABLES OF CASES OF MALARIAL FEVER.**  
**EUROPEANS.**

			CASES.					DEATHS.				
			1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Western Province	...		370	347	387	310	314	3	3	1	...	2
Central Province	...		149	174	190	236	234	2	1	...	3	1
Eastern Province	...		244	296	211	253	159	...	3	...	1	...
TOTALS	...	...	763	817	696	800	707	5	7	1	4	3

**NATIVES.**

			CASES.					DEATHS.				
			1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Western Province	...		2,393	2,876	3,042	2,950	2,084	8	...	10	10	4
Central Province	...		1,028	1,285	1,572	1,901	1,502	7	4	...	5	2
Eastern Province	...		1,983	1,971	1,834	2,672	2,702	4	6	7	9	13
TOTALS	...	...	5,404	6,132	6,448	7,523	6,228	19	10	17	24	19

**TOTAL CASES OF MALARIAL FEVER TREATED. (*European and Native.*)**

			CASES.					DEATHS.				
			1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Western Province	...		2,763	3,223	3,329	3,260	2,398	11	3	11	10	6
Central Province	...		1,177	1,459	1,770	2,139	1,736	9	5	...	8	3
Eastern Province	...		2,227	2,267	2,045	2,924	2,861	4	9	7	10	13
TOTALS	...	...	6,167	6,949	7,144	8,323	6,995	24	17	18	28	22

**EUROPEANS.**

				CASES.					DEATHS.				
				1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Lagos	...	...	...	175	199	172	187	152	...	3	1	...	1
Warri	...	...	...	40	73	51	108	88	...	...	...	1	...
Calabar	...	...	...	94	124	76	82	84	...	1	...	1	...
TOTALS	...	...	...	309	396	309	377	324	...	4	1	2	1

**NATIVES.**

				CASES.					DEATHS.				
				1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Lagos	...	...	...	1,728	2,150	2,410	2,189	1,076	5	...	9	9	2
Warri	...	...	...	226	325	424	508	263	1	...	...	2	1
Calabar	...	...	...	574	904	859	810	957	...	1	1	4	...
TOTALS	...	...	...	2,528	3,379	3,693	3,507	2,296	6	1	10	15	3

**TOTAL CASES OF MALARIAL FEVER. (*European and Native.*)**

				CASES.					DEATHS.				
				1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Lagos	...	...	...	1,903	2,349	2,582	2,376	1,268	5	3	10	9	3
Warri	...	...	...	266	398	475	616	351	1	...	...	3	1
Calabar	...	...	...	668	1,028	935	892	1,001	...	2	1	5	...
TOTALS	...	...	...	2,837	3,775	3,992	3,884	2,620	6	5	11	17	4

TABLE IX.—*continued.*

1913.

## TABLES OF BLACKWATER FEVER CASES.

	CASES.					DEATHS.				
	1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Western Province ...	14*	17	17	7‡	8§	4	3	6	3	1
Central Province ...	13	11	2	10‡	6	4	3	...	2	3
Eastern Province ...	4	6	7†	6	14	2	1	2	...	3
	31	34	26	23	28	10	7	8	4	6

\* Includes 1 Hindu and 1 Syrian.

† „ 1 Syrian.

‡ „ 1 West Indian.

§ „ 2 Natives.

	CASES.					DEATHS.				
	1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Lagos ... ..	7	11	8	6†	3	...	1	5	2†	1
Warri ... ..	2	2	...	3	3	1	...	...	1	1
Calabar ... ..	...	...	1*	1	7	...	...	1	...	1
	9	13	9	10	13	1	1	6	3	3

\* Includes 1 Syrian.

† „ 1 West Indian.

## POPULATION ACCORDING TO THE CENSUS RETURNS (1911).

	EUROPEANS.			Asiatics.	West Africa and other coloured races.
	Residents.	Local Steamers.	Ocean Steamers.		
Western Province ... ..	707	83	72	63	2,151,923
Central Province ... ..	395	35	476	3	2,407,685
Eastern Province ... ..	426	2	158	33	3,296,628
Lagos ... ..	553	83	72	43	73,115
Warri ... ..	66	1	49	...	2,451
Calabar ... ..	148	2	...	27	14,086
	2,195				



## GENERAL POPULATION.

## I.—VITAL STATISTICS.

Registration not being compulsory in all places, reliable facts cannot be given.

## II.—ESTIMATED POPULATION, 1911 ... 7,857,983.

		Natives.		Europeans.		Asiatics.		Others.
Western Province	...	2,151,483	...	790	...	63	...	440
Central Province	...	2,407,664	...	430	...	3	...	21
Eastern Province	...	3,296,602	...	428	...	33	...	26
Total	...	7,855,749	...	1,648	...	99	...	487

## III.—TOTAL BIRTHS AND BIRTH RATES.

Registration is not compulsory except in the Colony, and the only reliable statistics are those of Lagos and Ebute-Metta.

## IV.—TOTAL DEATHS AND DEATH RATES.

Registration is not compulsory except in the Colony, and only the Lagos and Ebute-Metta statistics are reliable.

## V.—INFANTILE MORTALITY.

Registration is not compulsory except in the Colony.

The infantile mortality in Lagos is shown on the charts.

## VI.—STATISTICS

for Lagos and Ebute-Metta are shown below for 1912 and 1913.

*Population of Lagos and Ebute-Metta.*

		Lagos.		Ebute-Metta.		Total.
Number of inhabitants in 1912	...	62,014	...	12,200	...	74,214
„ „ births during the year 1913	...	2,437	...	327	...	2,764
„ „ deaths „ „ 1913	...	1,867	...	311	...	2,178
„ „ inhabitants in 1913	...	63,046	...	12,403	...	75,449
Increase of inhabitants in 1913	...	1,032	...	203	...	1,235

## TABLE X.

## TABLES OF CASES OF INFECTIOUS DISEASES, 1913.

## EASTERN PROVINCE.

	Beri-beri.	Chicken-pox.	Dysentery.	Enteric fever.	Yellow fever.	Erysipelas.	Gonorrhœa.	Influenza.	Leprosy.	Malaria.	Blackwater fever.	Measles.	Pneumonia.	Rheumatic fever.	Septicæmia.	Trypanosomiasis.	Small-pox.	Syphilis, primary.	Syphilis, secondary.	Syphilis, tertiary.	Syphilis, inherited.	Tetanus.	Whooping cough.	Tuberculosis.	Yaws.
Abakaliki ...	...	22	3	...	...	...	23	1	...	29	...	...	1	...	...	...	...	...	...	...	...	2	...	...	...
Afikpo ...	...	78	31	...	...	...	26	...	...	97	1	...	9	...	...	...	...	...	9	...	...	1	...	1	2
Bende ...	...	...	10	...	...	...	32	...	...	147	...	...	8	1	2	...	...	...	...	...	...	...	...	...	11
Bonny ...	3	4	3	...	...	...	30	...	3	100	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...
Brass-Akassa ...	...	...	3	...	...	...	17	...	...	66	...	...	3	1	...	...	...	1	1	...	4	...	...	1	31
Calabar ...	...	124	80	...	1	...	117	1	...	1,001	7	4	36	19	3	1	...	...	13	...	4	2	7	27	12
Degema ...	...	...	9	...	...	...	31	...	3	69	1	...	1	...	...	...	...	...	...	...	...	...	...	6	3
Eket ...	...	83	34	...	...	...	38	...	...	173	1	...	5	22	...	376	...	...	18	...	...	...	2	4	1
Ikom-Obubra ...	...	2	7	...	...	...	86	...	1	146	1	...	1	3	2	...	...	...	23	...	2	...	...	8	30
Ikot-Ekpene ...	...	...	12	...	...	...	41	...	...	91	...	...	15	15	...	...	...	...	...	...	...	...	...	3	16
Itu ...	...	...	20	...	...	...	20	6	...	99	...	...	5	...	...	...	...	4	4	...	...	...	...	1	4
Obudu ...	...	19	8	...	...	...	10	...	...	51	2	...	3	...	...	...	...	...	...	1	...	3	12	15	
Ogoja ...	...	...	...	...	...	...	85	...	...	208	...	...	3	...	...	...	...	1	1	...	...	...	...	6	22
Okigwi ...	...	...	90	...	...	...	36	...	...	265	...	...	9	1	...	...	4	4	9	...	...	...	...	7	47
Opobo ...	...	9	34	...	...	...	37	...	5	140	1	...	14	...	...	...	...	4	18	...	...	1	10	18	
Owerri ...	...	...	3	...	...	...	133	...	...	179	...	...	7	...	...	...	...	111	...	...	...	...	...	3	14
TOTALS ...	3	341	347	...	1	...	762	8	12	2,861	14	4	126	62	7	377	4	14	108	...	10	5	13	79	226
TOTALS 1912	10	622	237	...	...	...	755	27	23	2,924	6	1	118	53	23	152	8	43	107	1	53	4	55	11	90
TOTALS 1911	5	635	237	...	...	...	570	27	27	2,045	7	1	76	...	...	1	23	35	113	...	12	2	32	2	50

## WESTERN PROVINCE.

Lagos ...	11	70	158	...	36	...	342	22	27	1,268	3	54	43	70	6	...	6	11	9	...	6	34	3	32	4
Ibadan ...	...	...	20	...	...	...	75	9	2	365	3	3	20	15	1	1	...	...	3	1	...	4	...	...	2
Badagry ...	...	...	6	...	...	...	8	...	...	41	...	...	...	...	...	...	...	...	2	...	...	...	...	2	1
Epe ...	...	...	6	...	...	1	10	...	1	38	...	...	1	...	...	...	1	2	...	...	...	...	3	3	1
Aro ...	2	3	15	...	...	...	3	...	...	340	2	2	5	...	8	...	...	11	...	...	...	1	...	9	...
Oshogbo ...	...	1	6	...	...	...	13	...	...	38	...	...	2	...	...	...	1	...	...	...	...	...	1	...	...
Ebute-Metta ...	...	1	12	...	...	...	32	...	...	308	...	3	...	5	2	...	...	...	1	...	...	...	...	...	...
TOTALS ...	13	76	223	...	36	1	483	31	30	2,398	8	62	71	90	17	1	8	24	15	1	6	39	7	46	8
TOTALS 1912	18	132	374	2	...	...	488	2	38	3,107	7	4	56	33	15	...	29	27	4	...	2	37	14	49	22
TOTALS 1911	51	33	367	...	...	...	513	...	24	3,128	14	4	59	...	...	2	23	3	28	...	2	28	128	104	5

## CENTRAL PROVINCE.

Warri	...	...	163	10	...	2	...	92	...	...	351	3	1	6	...	...	...	...	10	...	3	1	...	17	9	
Forcados	...	...	7	105	...	1	...	259	...	...	428	...	2	51	...	4	...	...	...	...	...	...	7	...		
Asaba	...	...	...	18	...	...	...	48	...	...	25	...	2	1	...	...	...	...	...	...	...	...	...	6		
Sapele	...	...	287	122	1	...	...	54	...	...	173	1	...	15	1	...	...	...	3	...	4	...	7	10		
Benin City	...	...	...	19	...	...	1	23	1	...	150	...	1	...	...	...	...	...	1	...	1	...	2	...		
Aboh	...	...	1	29	...	...	...	17	...	...	61	...	...	3	...	...	...	...	...	...	...	...	...	6		
Agbor	...	...	1	3	...	...	...	39	...	...	139	...	...	4	...	1	...	5	...	...	2	...	1	1		
Udi	...	...	2	20	...	...	...	55	...	...	60	...	...	4	...	1	...	...	4	...	...	...	...	...		
Okwoga	...	...	1	...	...	...	...	18	...	...	49	1	...	9	1	...	...	...	2	...	...	...	1	5		
Onitsha	...	...	174	118	...	1	...	58	1	95	249	1	...	26	1	3	...	...	3	2	...	3	...	23		
Awka	...	...	10	49	...	...	...	5	...	...	79	...	1	5	1	1	...	...	1	...	...	...	...	3		
TOTALS	...	...	648	493	1	4	1	668	2	95	1,736	6	7	124	4	10	...	5	8	18	...	12	2	8	38	63
TOTALS	1912	8	474	426	...	...	4	702	...	63	2,163	10	2	89	7	6	2	15	22	39	...	4	3	2	51	51
TOTALS	1911	...	487	344	...	...	...	562	...	10	1,770	2	6	104	...	...	2	13	32	16	...	8	2	69	31	49

## TOTAL CASES OF INFECTIOUS DISEASES FOR THE COLONY.

TOTALS ...	16	1,065	1,063	1	41	2	1,913	41	137	6,995	28	83	321	157	35	378	17	46	140	1	28	46	25	163	297
TOTALS 1912	36	1,228	1,037	2	...	4	1,947	29	124	8,194	23	7	263	93	44	154	52	92	150	1	59	44	155	27	163
TOTALS 1911	56	1,155	840	...	...	...	1,645	1	41	6,943	23	11	239	...	...	5	59	70	157	...	22	32	167	99	104

Some cases of Infectious Diseases are reported to the Sanitary Office by Private Practitioners and are not down in the Government Report.



**TABLE XI.**  
**HELMINTHIC DISEASE—1913.**  
**WESTERN PROVINCE.**

				Trematoda.	Cestoda.	Nematoda (Ascarides).	Trichocephalus dispar.	Dracunculus.	Filariasis.	Ankylostomiasis.	Oxyuris.	Strongylus.	Insecta (Chigger).	Myiasis.	Pediculi.
Lagos	...	...	...	...	34	400	2	163	2	20	...	2	...	1	...
Ibadan	...	...	...	...	18	681	...	62	3	25	1	...	...	...	...
Badagry	...	...	...	...	...	22	...	5	...	...	...	...	1	...	...
Epe...	...	...	...	...	1	26	...	6	1	...	...	...	...	...	...
Aro...	...	...	...	...	3	74	...	71	...	...	...	...	...	...	...
Oshogbo	...	...	...	...	...	24	...	5	...	1	...	...	...	...	...
Ebute Metta	...	...	...	...	6	17	...	71	1	1	...	...	...	...	...
TOTALS	1913	...	...	...	62	1,244	2	383	7	47	1	2	1	1	...
	„ 1912	...	...	3	82	2,181	...	368	7	36	1	16	5	1	2
	„ 1911	...	...	...	69	2,734	...	296	2	52	1	29	...	...	...

**CENTRAL PROVINCE.**

Warri	...	...	...	1	6	4	...	...	...	...	...	...	3	...	1
Forcados	...	...	...	...	...	11	...	8	2	39	...	...	...	1	...
Asaba	...	...	...	...	...	13	...	...	...	...	...	...	...	...	...
Sapele	...	...	...	...	4	106	9	...	...	...	...	...	...	...	...
Benin City	...	...	...	...	1	49	...	6	1	...	...	...	6	...	...
Aboh	...	...	...	...	1	5	...	...	...	9	...	...	...	...	...
Agbor	...	...	...	...	2	5	...	6	2	...	...	...	...	...	...
Udi...	...	...	...	...	1	25	...	22	6	38	...	...	...	...	...
Okwoga	...	...	...	...	2	4	...	1	1	4	...	...	...	...	...
Onitsha	...	...	...	...	23	80	...	7	...	14	...	...	6	...	8
Awka	...	...	...	...	...	6	...	...	1	...	...	...	...	...	...
TOTALS	1913	...	...	1	40	308	9	50	13	104	...	...	15	1	9
	„ 1912	...	...	...	6	383	5	64	23	144	4	2	...	...	...
	„ 1911	...	...	...	22	418	1	46	13	323	...	...	14	...	...

**EASTERN PROVINCE.**

Abakaliki	...	...	...	...	2	...	...	45	...	...	...	...	1	...	...
Afikpo	...	...	...	...	...	...	...	17	...	...	...	...	...	...	...
Bende	...	...	...	...	...	2	...	...	...	...	...	...	3	...	...
Bonny	...	...	...	...	...	...	...	3	...	...	...	...	1	1	...
Brass Akassa	...	...	...	...	...	4	...	3	2	...	...	...	...	...	...
Calabar	...	...	...	...	1	167	2	30	15	28	1	...	1	...	...
Degema	...	...	...	...	1	2	...	4	1	1	...	...	...	...	...
Eket	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...
Ikom Obubra	...	...	...	...	...	6	...	5	1	...	...	...	6	4	...
Ikot Ekpene	...	...	...	...	...	1	...	1	...	...	1	...	...	1	...
Itu	...	...	...	...	...	3	...	2	...	...	...	...	...	...	...
Obudu	...	...	...	...	...	36	...	12	7	3	...	...	1	2	...
Ogoja	...	...	...	...	...	8	...	9	...	...	...	...	...	...	...
Okigwi	...	...	...	...	...	7	...	7	6	4	...	...	...	1	...
Opobo	...	...	...	...	5	6	...	1	11	15	...	...	2	...	...
Owerri	...	...	...	...	...	18	1	28	...	9	20	...	...	1	...
TOTALS	1913	...	...	...	9	261	3	167	43	61	22	...	15	10	...
	„ 1912	...	...	...	29	109	1	193	65	225	31	...	...	3	...
	„ 1911	...	...	...	17	197	...	142	3	29	2	...	20	1	...

**TOTALS FOR THE THREE PROVINCES.**

1913	...	...	1	111	1,913	14	590	63	212	23	2	31	12	9
1912	...	...	3	117	2,673	6	625	95	405	2	2	16	10	1
1911	...	...	...	108	3,349	...	484	18	404	...	...	36	1	...

## TABLE XII.

## ANNUAL SANITARY REPORT ON PRISONS FOR 1913.

## WESTERN PROVINCE.

Prisons.	Average number of prisoners per night.	Site area in sq. yds. per prisoner.	Average floor space of cells per prisoner.	Average cell space in cub. ft. per prisoner.	Average ventilating space in sq. ft. per prisoner.	Total number of prisoners medically treated.	Total number of prisoners unfit for duty.	Average number of days prisoners unfit for duty.	Death rate per 1,000 per annum.
Abeokuta ...	176.5	44	34	359.1	3.4	660	120	17.2	136.1
Badagry ...	39.1	26.08	55	443.3	7.2	59	13	9.5	Nil
Epe ...	45.7	No wall	30	310	2.7	237	36	9.4	21.8
Ibadan ...	117	28.5	32	323.6	1.6	670	215	12.9	Nil
Lagos...	296.7	50.3	46	460	6	929	256	9.3	53.9
Ondo ...	11.2	79	60	717	2.5	41	12	4.5	Nil
Oshogbo ...	18.5	126.5	39	555	1.1	45	2	5	Nil
AVERAGE ...	100.6	44.3	42.2	452.5	3.07	330.1	81.7	8.4	30.2

## CENTRAL PROVINCE.

Abo ...	79.5	25.3	24	297.4	1.3	257	84	6.2	112.7
Agbor ...	100.3	24.2	22	258.7	2.9	290	84	7.4	79.7
Asaba ...	50.2	32.6	35	525.5	5.5	106	22	2.4	39.8
Awka ...	237.5	17.9	21	222.3	3	404	330	7.8	58.8
Benin ...	79.6	48.2	33	337.5	2.6	745	126	8.5	Nil
Forcados ...	86.5	109.7	45	502.3	4.4	579	198	8.5	57.8
Idah ...	52.3	60.6	36	362	1.1	32	16	16.8	Nil
Ifon ...	27.3	50	39	400	2	Nil	Nil	Nil	Nil
Kwale ...	91.2	52.2	35	350	1	415	155	6.1	Nil
Okwoga ...	68.8	31.7	14	133.7	1.2	204	115	6.3	130.8
Onitsha ...	181.7	24.8	35	355.4	6.3	502	297	14.5	104
Sapele ...	200	50	44	400	12	111.7	534	13.5	160
Ubiaja ...	68.6	35.5	27	278	3.7	27	9	34	14.4
Udi ...	82.1	22.1	19	240.1	0.7	262	134	5	365.4
Warri ...	177.7	16.6	19	177.3	1.5	550	393	11.1	11.3
Ogwashi ...	34.8	19.1	51	514.1	4.8	Nil	Nil	Nil	Nil
AVERAGE ...	101.1	38.7	31.1	334	3.405	343.2	156	7.29	71

## EASTERN PROVINCE.

Abakaliki ...	54.1	101.5	60	604.6	11.8	259	51	10.9	Nil
Afikpo ...	156.1	31.8	38	383.4	11.4	231	113	9.5	121.7
Akassa ...	6.5	188.2	109	928.7	2.7	1	Nil	Nil	Nil
Bende ...	192.3	12.1	15	152.3	3.7	901	140	13.2	31.2
Bonny ...	48.1	28.2	59	704	15.6	191	65	9.7	83.1
Brass ...	44.6	75.8	40	410	4.8	78	37	6.8	118.8
Calabar ...	418.3	28.8	30	337.3	6.3	1,035	290	8.6	94.6
Degema ...	159.4	50.1	43	436.4	8.5	587	724	12	37.5
Eket ...	139.2	13.3	25	333	4.1	400	64	8.9	21.5
Ikom ...	51.2	37.4	19	199	3.9	254	38	3.9	19.3
Ikot-Ekpene ...	350.6	39.2	48	481.7	6.4	1,132	298	12.8	67
Itu ...	72.6	71.7	70	703.6	14.3	248	37	15.2	95
Obubra ...	89.7	85	31	377.2	12	329	59	6.1	66.8
Obudu ...	59	101.2	81	975	8.4	149	53	5.9	67.7
Ogoja...	53.4	81	43	510.8	10.5	212	63	6.8	54.3
Okigwi ...	223.2	32.7	55	608.5	10	454	207	6.7	277.7
Opobo ...	246.7	15.7	33	404.2	7.9	773	175	6.3	44.5
Owerri ...	150.2	37.9	41	501.7	7.7	284	96	5.5	113.1
AVERAGE ...	134.1	57.3	46.6	502.8	8.3	417.6	147.6	8.7	72.9

## DAILY AVERAGE FOR ALL PRISONS IN EACH PROVINCE FOR 1913.

WESTERN PROVINCE...	100.6	44.3	42.2	452.5	3	330.1	81.7	8.4	30.2
CENTRAL PROVINCE ...	101.1	38.7	31.1	334	3.4	343.2	15.6	7.2	71
EASTERN PROVINCE ...	134.1	57.3	46.6	502.8	8.3	417.6	147.6	8.7	72.9



EASTERN PROVINCE

[illegible]

CENTRAL PROVINCE.

[illegible]

## WESTERN PROVINCE.

[illegible]

**TABLE XIII.**  
**SPLEEN RETURNS, 1913.**

DISTRICT.		AGES OF THOSE EXAMINED.									TOTALS.	PER- CENTAGES.
		0-2 years.	2-5 years.	5-10 years.	10-15 years.	15-20 years.	20-30 years.	30-40 years.	Over 40 yrs.			
WESTERN PROVINCE.												
ARO ...	Number examined...	22	27	28	21	35	18	41	16	208	...	
	Normal ...	20	25	21	19	29	17	34	5	170	81·7	
	Slightly enlarged ...	2	2	5	2	5	...	6	3	25	12·0	
	Enlarged beyond costal margin ...	...	...	2	...	1	1	1	8	13	6·2	
BADAGRY ...	Number examined...	31	78	112	54	23	43	34	20	385	...	
	Normal ...	4	7	37	20	15	33	30	16	152	39·4	
	Slightly enlarged ...	3	16	41	23	6	9	3	3	104	27·0	
	Enlarged beyond costal margin ...	24	55	34	11	2	1	1	1	129	33·0	
EPE ...	Number examined...	6	11	4	2	...	...	...	...	23	...	
	Normal ...	5	6	3	2	...	...	...	...	16	69·5	
	Slightly enlarged ...	1	5	1	...	...	...	...	...	7	30·4	
	Enlarged beyond costal margin ...	...	...	...	...	...	...	...	...	...	...	
IBADAN ...	Number examined...	53	253	498	551	265	146	15	4	1,785	...	
	Normal ...	19	125	292	421	180	114	12	...	1,163	65·1	
	Slightly enlarged ...	14	71	134	109	72	24	2	4	430	24·0	
	Enlarged beyond costal margin ...	20	57	72	21	13	8	1	...	192	10·7	
CENTRAL PROVINCE.												
ABOH ...	Number examined...	56	43	55	18	84	154	44	12	466	...	
	Normal ...	34	27	37	13	67	90	29	9	306	68·6	
	Slightly enlarged ...	16	11	9	4	15	61	13	2	131	28·1	
	Enlarged beyond costal margin ...	6	5	9	1	2	3	2	1	29	6·2	
AGBOR ...	Number examined...	2	24	17	29	59	37	37	2	207	...	
	Normal ...	1	8	5	16	38	26	30	2	126	60·8	
	Slightly enlarged ...	1	8	10	8	7	7	5	...	46	22·2	
	Enlarged beyond costal margin ...	...	8	2	5	14	4	2	...	35	16·9	
BENIN CITY	Number examined ...	70	118	310	131	50	58	52	39	828	...	
	Normal ...	16	50	188	87	44	47	49	37	518	62·5	
	Slightly enlarged ...	27	45	60	32	3	7	3	2	179	21·6	
	Enlarged beyond costal margin ...	27	23	62	12	3	4	...	...	131	15·8	
FORCADOS ...	Number examined...	84	55	29	62	119	254	91	24	718	...	
	Normal ...	15	19	10	19	40	78	28	13	222	30·9	
	Slightly enlarged ...	27	16	12	21	47	114	36	6	279	38·8	
	Enlarged beyond costal margin ...	42	20	7	22	32	62	27	5	217	30·2	
OKWOGA ...	Number examined...	1	3	...	1	1	16	9	...	31	...	
	Normal ...	...	...	...	...	...	11	4	...	15	48·3	
	Slightly enlarged ...	1	3	...	1	1	5	5	...	16	51·6	
	Enlarged beyond costal margin ...	...	...	...	...	...	...	...	...	...	...	
ONITSHA ...	Number examined...	114	103	88	82	130	486	672	528	2,203	...	
	Normal ...	54	41	62	57	112	410	599	497	1,832	83·1	
	Slightly enlarged ...	41	32	17	15	10	67	67	28	277	12·5	
	Enlarged beyond costal margin ...	19	30	9	10	8	9	6	3	94	4·2	



TABLE XIII.—*continued.*SPLEEN RETURNS, 1913.—*continued.*

DISTRICT.		AGES OF THOSE EXAMINED.									TOTALS.	PER- CENTAGES
		0-2 years.	2-5 years.	5-10 years.	10-15 years.	15-20 years.	20-30 years.	30-40 years.	Over 40 yrs.			
CENTRAL PROVINCE — continued.												
SAPELE	...	Number examined...	71	41	36	19	18	4	2	...	191	...
		Normal ...	17	5	11	7	11	4	...	...	55	28·7
		Slightly enlarged ...	2	4	4	1	...	...	1	...	12	6·2
		Enlarged beyond Costal Margin ...	52	32	21	11	7	...	1	...	124	64·9
UDI ...	...	Number examined...	...	3	24	15	12	26	20	...	100	...
		Normal ...	...	2	10	5	8	15	20	...	60	60·0
		Slightly enlarged ...	...	1	12	10	4	11	...	...	38	38·0
		Enlarged beyond Costal Margin ...	...	...	2	...	...	...	...	...	2	2·0
WARRI	...	Number examined...	12	36	11	2	4	9	7	...	81	...
		Normal ...	4	1	3	...	1	5	5	...	19	23·4
		Slightly enlarged ...	...	8	1	2	...	2	1	...	14	17·2
		Enlarged beyond Costal Margin ...	8	27	7	...	3	2	1	...	48	59·2
EASTERN PROVINCE.												
ABAKALIKI		Number examined...	8	10	16	22	17	51	27	4	155	...
		Normal ...	1	2	6	13	12	35	26	2	97	62·5
		Slightly enlarged ...	4	2	1	5	3	4	1	1	21	13·5
		Enlarged beyond Costal Margin ...	3	6	9	4	2	12	...	1	37	23·8
AFIKPO	...	Number examined...	41	31	60	80	42	57	109	1	421	...
		Normal ...	18	15	39	56	33	41	93	1	296	70·3
		Slightly enlarged ...	12	10	12	17	6	14	12	...	83	19·7
		Enlarged beyond Costal Margin ...	11	6	9	7	3	2	4	...	42	9·9
BENDE	...	Number examined...	34	73	114	113	89	269	342	22	1,056	...
		Normal ...	30	64	97	96	73	215	302	12	889	84·1
		Slightly enlarged ...	3	5	9	9	7	11	10	6	60	5·6
		Enlarged beyond Costal Margin ...	1	4	8	8	9	43	30	4	107	10·1
BONNY	...	Number examined	97	81	67	83	54	61	7	9	459	...
		Normal ...	34	23	19	16	7	18	...	...	117	25·4
		Slightly enlarged ...	45	30	26	53	21	26	2	2	205	44·6
		Enlarged beyond Costal Margin...	18	28	22	14	26	17	5	7	137	29·8
BRASS	...	Number examined...	26	29	94	56	23	89	57	28	402	...
		Normal ...	8	9	70	50	23	79	49	25	313	77·8
		Slightly enlarged ...	2	5	9	2	...	3	2	...	23	5·7
		Enlarged beyond Costal Margin ...	16	15	15	4	...	7	6	3	66	16·4
DEGEMA	...	Number examined...	12	36	254	258	168	176	108	13	1,025	...
		Normal ...	1	9	149	154	113	101	65	12	604	58·9
		Slightly enlarged ...	4	8	51	65	38	63	27	1	257	25·0
		Enlarged beyond Costal Margin ...	7	19	54	39	17	12	16	...	164	16·0
IKOM-OBUBRA		Number examined...	65	132	222	152	135	317	126	42	1,181	...
		Normal ...	28	49	130	117	110	226	89	34	783	66·2
		Slightly enlarged ...	5	10	23	8	5	26	13	2	92	7·7
		Enlarged beyond Costal Margin ...	32	63	69	27	20	65	24	6	306	25·9

TABLE XIII.—*continued.*SPLEEN RETURNS, 1913.—*continued.*

DISTRICT.		AGES OF THOSE EXAMINED.									TOTALS.	PER- CENTAGES
		0-2 years.	2-5 years.	5-10 years.	10-15 years.	15-20 years.	20-30 years.	30-40 years.	Over 40 yrs.			
EASTERN PROVINCE —continued.												
IKOT EKPENE	Number examined	1	44	65	89	236	147	463	4	1,049	...	
	Normal ...	...	...	27	54	135	102	327	4	649	61·8	
	Slightly enlarged ...	...	23	14	10	54	18	66	...	185	17·6	
	Enlarged beyond costal margin ...	1	21	24	25	47	27	70	...	215	20·5	
ITU ...	Number examined...	24	25	108	116	43	59	23	...	398	...	
	Normal ...	9	5	26	50	17	36	6	...	149	37·4	
	Slightly enlarged ...	9	7	35	29	15	18	11	...	124	31·1	
	Enlarged beyond costal margin ...	6	3	47	37	11	5	6	...	125	31·4	
OKIGWI ...	Number examined...	54	50	48	102	56	111	39	51	511	...	
	Normal ...	47	41	35	82	44	92	35	43	419	81·0	
	Slightly enlarged ...	6	7	9	17	12	14	3	6	74	14·4	
	Enlarged beyond costal margin ...	1	2	4	3	...	5	1	2	18	3·5	
OPOBO ...	Number examined...	...	...	...	4	30	133	246	34	447	...	
	Normal ...	...	...	...	3	26	122	223	31	405	90·6	
	Slightly enlarged ...	...	...	...	1	4	11	21	1	38	8·5	
	Enlarged beyond costal margin ...	...	...	...	...	...	...	2	2	4	0·8	
OWERRI ...	Number examined...	30	105	271	360	223	397	186	10	1,582	...	
	Normal ...	9	35	138	160	125	268	130	9	874	55·2	
	Slightly enlarged ...	10	43	75	148	73	104	45	...	598	37·8	
	Enlarged beyond costal margin ...	11	27	58	52	25	25	11	1	210	13·2	
WESTERN PROVINCE.												
	Number examined...	112	369	608	628	323	207	90	40	2,377	...	
	Normal ...	48	163	353	462	224	164	76	21	1,511	63·5	
	Slightly enlarged ...	20	94	181	134	83	33	11	10	566	23·8	
	Enlarged beyond costal margin ...	44	112	74	32	16	10	3	9	300	12·6	
CENTRAL PROVINCE.												
	Number examined...	410	426	572	366	377	1,002	934	605	4,692	...	
	Normal ...	141	153	323	204	221	686	764	558	3,050	65·0	
	Slightly enlarged ...	115	128	125	101	87	274	131	38	999	21·2	
	Enlarged beyond costal margin ...	154	145	124	61	69	42	39	9	643	13·7	
EASTERN PROVINCE.												
	Number examined...	392	610	1,319	1,435	1,113	1,867	1,733	225	8,694	...	
	Normal ...	185	256	736	851	715	1,335	1,345	173	5,596	64·3	
	Slightly enlarged ...	100	150	264	364	238	312	213	26	1,667	19·1	
	Enlarged beyond costal margin ...	107	204	319	220	160	220	175	26	1,431	16·4	
SOUTHERN NIGERIA.												
	Number examined...	914	1,405	2,499	2,429	1,813	3,076	2,757	870	15,763	...	
	Normal ...	374	572	1,412	1,517	1,160	2,185	2,185	752	10,157	64·4	
	Slightly enlarged ...	235	372	570	599	408	619	355	74	3,232	20·5	
	Enlarged beyond costal margin ...	305	461	517	313	245	272	217	44	2,374	15·0	



TABLES OF CASES OF MALARIAL FEVER.  
EUROPEANS.

		CASES.					DEATHS.				
		1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Western Province	...	370	374	287	310	314	3	3	1	...	2
Central Province	...	149	174	198	238	234	2	1	...	3	1
Eastern Province	...	244	296	211	252	159	...	3	...	1	...
TOTAL	...	763	817	696	800	707	5	7	1	4	3

NATIVES.

		CASES.					DEATHS.				
		1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Western Province	...	2,393	2,876	3,042	2,950	2,084	8	...	10	10	4
Central Province	...	1,028	1,285	1,572	1,901	1,502	7	4	...	5	2
Eastern Province	...	1,983	1,971	1,834	2,672	2,702	4	6	7	9	13
TOTAL	...	5,404	6,132	6,448	7,523	6,288	19	10	17	24	19

TOTAL CASES OF MALARIA TREATED.  
(*European and Native.*)

		CASES.					DEATHS.				
		1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Western Province	...	2,763	3,223	3,329	3,260	2,398	11	3	11	10	6
Central Province	...	1,177	1,459	1,770	2,139	1,736	9	5	...	8	3
Eastern Province	...	2,227	2,267	2,045	2,924	2,861	4	9	7	10	13
TOTAL	...	6,167	6,949	7,144	8,323	6,995	24	17	18	28	22

TABLES OF BLACKWATER FEVER CASES.  
EUROPEANS

		CASES.					DEATHS.				
		1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Western Province	...	14	17	17	7	6	4	3	6	2	1
Central Province	...	13	11	2	10	6	4	3	...	2	3
Eastern Province	...	4	6	7	6	14	2	1	2	...	2
TOTAL	...	31	34	26	23	26	10	7	8	4	6

NATIVES

		CASES.					DEATHS.				
		1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.
Western Province	...	...	...	...	...	2	...	...	...	...	...
Central Province	...	...	...	...	...	...	...	...	...	...	...
Eastern Province	...	...	...	...	...	...	...	...	...	...	...
TOTAL	...	...	...	...	...	*2	...	...	...	...	...

\* One was a West Indian and the other a Native boy aged 12 years.

TABLES OF YELLOW FEVER CASES.

EUROPEANS.

PROVINCE.	CASES.		DEATHS.	
	1912.	1913.	1912.	1913.
Western...     ...     ...     ...     ...	—	13	—	7
Central ...     ...     ...     ...     ...	—	3	—	2
Eastern ...     ...     ...     ...     ...	—	1	—	—
Total     ...     ...	—	17	—	9

NATIVES.

PROVINCE.	CASES.		DEATHS.	
	1912.	1913.	1912.	1913.
Western...     ...     ...     ...     ...	—	20	—	—
Central ...     ...     ...     ...     ...	—	1	—	—
Eastern ...     ...     ...     ...     ...	—	—	—	—
Total     ...     ...	—	21	—	—

TABLES OF TRYPANOSOMIASIS CASES.

EUROPEANS.

PROVINCE.	CASES.		DEATHS.	
	1912.	1913.	1912.	1913.
Western Province     ...     ...     ...	—	—	—	—
Central Province     ...     ...     ...	—	—	—	—
Eastern Province     ...     ...     ...	—	—	—	—
Total     ...     ...	—	—	—	—



TABLES OF TRYPANOSOMIASIS—*continued.*

NATIVES.

PROVINCE.				CASES.		DEATHS.	
				1912.	1913.	1912.	1913.
Western Province	...	...	...	—	1	—	1
Central Province	...	...	...	1	—	—	—
Eastern Province	...	...	...	152	377	8	5
Total	...	...	...	153	378	8	6

TABLES OF FILARIASIS CASES.

EUROPEANS.

PROVINCE.				CASES.		DEATHS.	
				1912.	1913.	1912.	1913.
Western Province	...	...	...	—	—	—	—
Central Province	...	...	...	—	—	—	—
Eastern Province	...	...	...	4	1	—	—
Total	...	...	...	4	1	—	—

NATIVES.

PROVINCE.				CASES.		DEATHS.	
				1912.	1913.	1912.	1913.
Western Province	...	...	...	8	7	—	—
Central Province	...	...	...	23	13	—	—
Eastern Province	...	...	...	61	42	—	—
Total	...	...	...	92	62	—	—

TABLE SHOWING QUANTITY OF QUININE ISSUED GRATIS  
FOR PROPHYLACTIC PURPOSES.

Province.	1911.	1912.	1913.	Increase 1913.	Decrease 1913.	Value.
Western ...	1,530,100	1,344,000	915,001	—	427,999	£146 3 11
Central ...	229,963	355,448	407,484	52,036	—	74 16 6
Eastern ...	586,384	301,286	625,845	324,559	—	106 3 11
Total ...	2,346,447	2,000,734	1,948,330	376,595	427,999	£327 4 4

NOTE.—The marked decrease in the case of the Western Province is possibly due to the issue of the quinine in smaller quantities, to prevent wastage. In the more civilised Western Province the people, recognising the value of this drug, purchase from the local drug stores.

TABLE SHOWING RESULTS OF VACCINATIONS, WITH  
COMPARISON WITH PREVIOUS YEARS.

Province.	1910.		1911.		1912.		1913.	
	Number Vaccinated.	Successful.	Number Vaccinated.	Successful.	Number Vaccinated.	Successful.	Number Vaccinated.	Successful.
Western ...	75,691	43,981	83,162	52,777	104,133	62,768	65,813	43,727
Central ...	12,902	6,935	35,123	22,431	65,445	53,040	43,591	32,814
Eastern ...	47,054	37,663	48,109	38,449	73,738	61,136	59,087	45,561
Total ...	135,647	88,579	166,394	113,657	243,316	176,944	168,491	121,102



No.

PERMIT UNDER REGULATION No. OF 1913.

Name

Residence

Date

1. You are required to attend at the daily at the hours of 9 a.m. and 4 p.m. for consecutive days from the above date.

2. Any intention to change your place of residence from the above address must be notified to me before that change is made.

3. Should illness prevent your attendance on any occasion mentioned above you are required to notify me immediately in order that you may be at once visited.

4. You are required to deposit such sum as the Medical Officer requires not exceeding £2 as a guarantee that you will conform to the above regulations. This money will be returned to you at the close of the surveillance period on presentation of this paper duly signed by the Medical Officer on each and every occasion on which you are required to attend.

5. The Medical Officer may direct your removal to the Hospital or Isolation Station at any time he may consider necessary during the period of surveillance, in which case any deposit which may have been made will be refunded provided all the above regulations have been complied with up to that time.

[P.T.O.]

PENALTIES ON FAILURE TO COMPLY WITH THE  
ABOVE REGULATIONS.

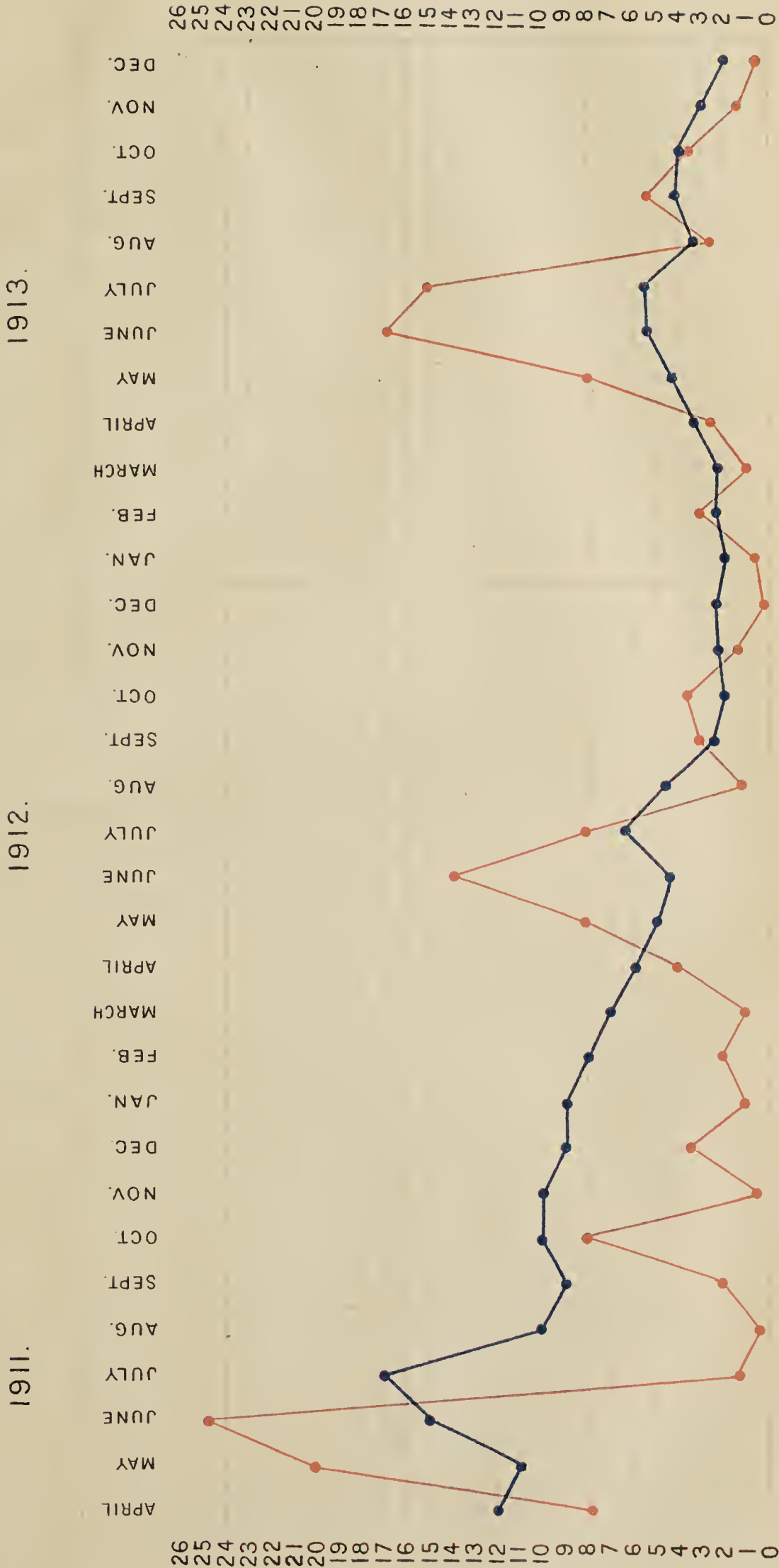
1. Forfeiture of the privilege of Surveillance.
2. Forfeiture of Deposit.
3. Immediate removal to the Isolation Station.
4. Prosecution in the Local Court where on conviction a fine of £25 may be imposed together with a term of imprisonment for three months with hard labour.

[illegible]



RAINFALL AND MOSQUITO INDICES FOR LAGOS,

1911, 1912 AND 1913.



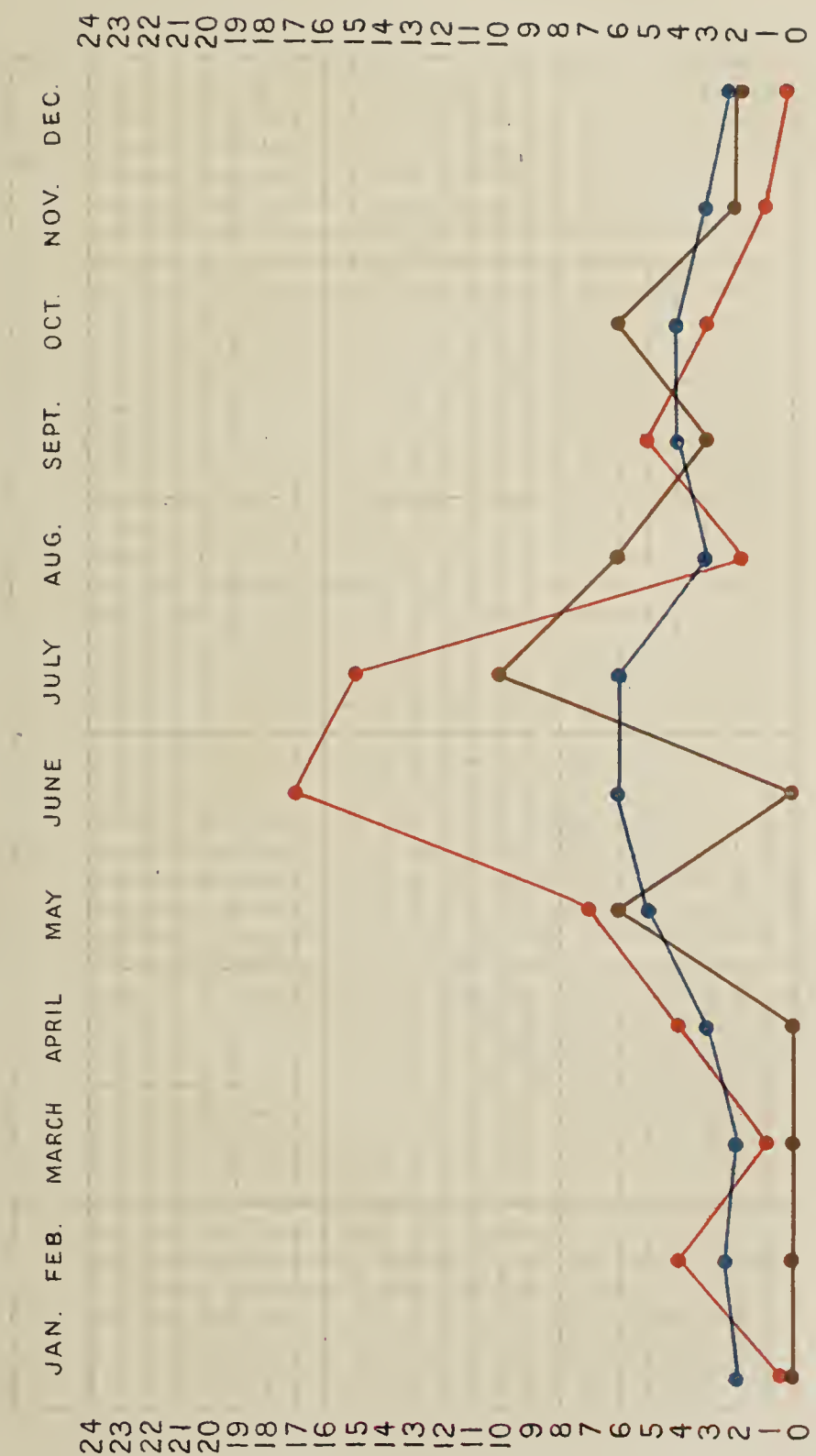
One space equals percentage of houses with larvae in houses examined.  
Rainfall (red) one space equals one inch.  
Mosquito Index (blue).

R. Laurie





CHART SHEWING RAINFALL, MOSQUITO INDEX, AND YELLOW FEVER CASES  
IN LAGOS DURING YEAR 1913.



Rainfall (red) one space equals one inch.  
Yellow Fever (brown) one space equals one case  
Mosquito Index (blue) percentage houses with larvae in houses examined.

R. Lawrie





CHART SHEWING RAINFALL, MALARIA AND BLACKWATER FEVER CASES (EUROPEAN ONLY) IN LAGOS HOSPITAL DURING FIVE YEARS 1909-1913.

1909.

1910.

1911.



Red shews Rainfall, one space equals one inch.  
Green shews Malaria, one space equals one case.  
Brown shews Blackwater Fever, one space equals one case.

COMPOSITE CHART SHEWING MALARIA AND BLACKWATER FEVER, 1909-1913.

1912.

1913.



Red shews Rainfall, one space equals one inch.  
Green shews Malaria, one space equals one case.  
Brown shews Blackwater Fever, one space equals one case.

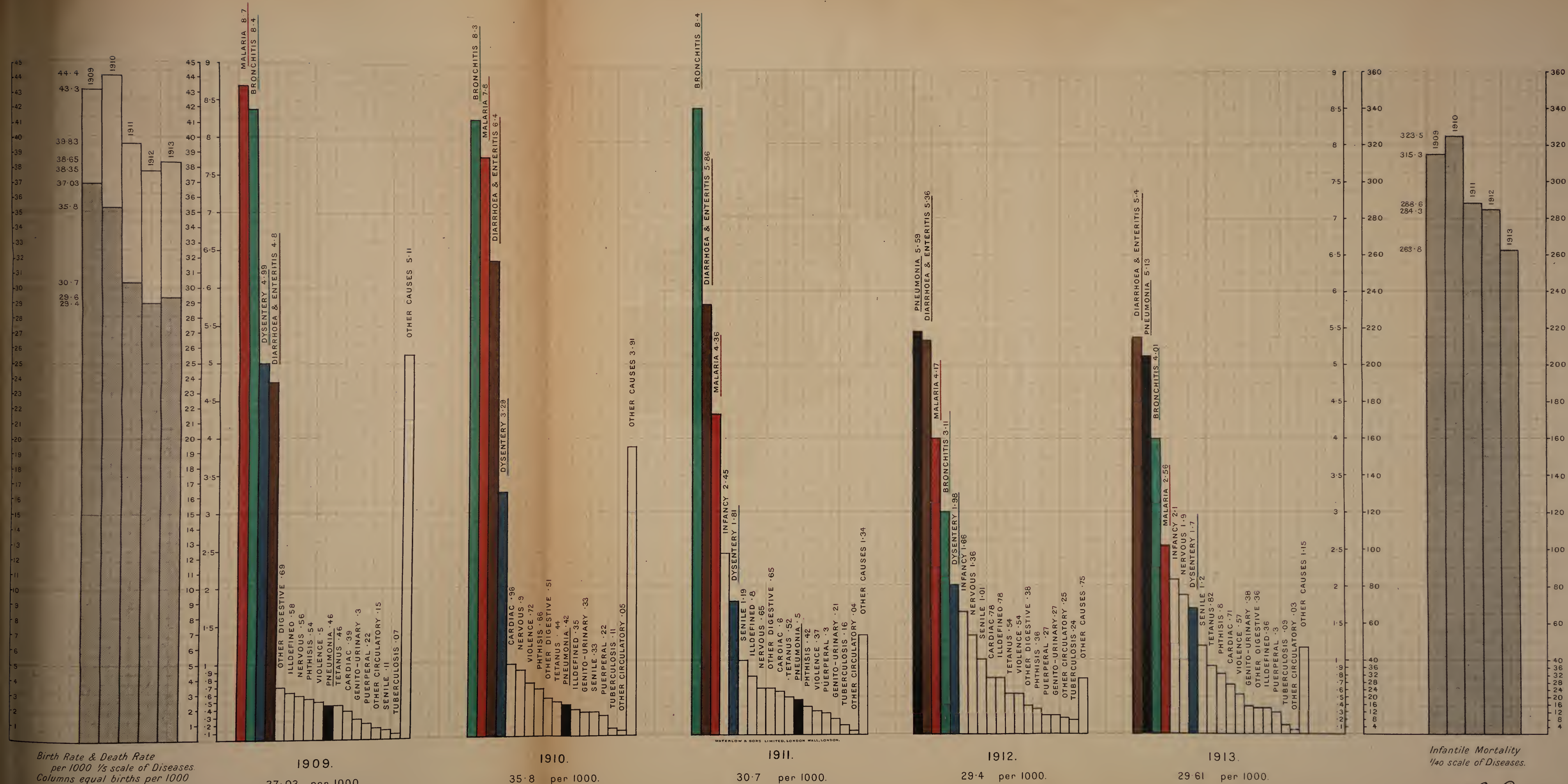
Green shews Total Malaria 1909-1913,  
(one space equals three cases)  
Brown shews Blackwater Fever 1909-1913,  
(one space equals one case.)

R Laurie





CHART SHEWING DEATHS FROM PRINCIPAL DISEASES COMPARED FOR FIVE YEARS 1909 TILL 1913.



Infantile Mortality  
1/40 scale of Diseases.  
R Laurie







# XII PLAN OF TOWN OF LAGOS

REVISED TO AUGUST, 1911.

SCALE 12 CHAINS (792 FT) TO ONE INCH.  
LINKS 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 CHAINS

## NOTES

Tramways. ————  
Motor Roads (Proposed) ————  
Wells. ○  
Boundaries of Districts ————  
Longitude of Lagos Observatory 3° 23' 49" 8"  
Latitude ———— 6° 26' 41" 2"

## ABBREVIATIONS

A.D.T.C. African Direct Telegraph Company  
A.G. Attorney General  
B.B.W.A. Bank of British West Africa  
C.F.A.O. Compagnie Française de l'Afrique Occidentale.  
C.M.S. Church Missionary Society  
D.P.W. Director of Public Works  
E.D. & C. Elder, Dempster and Company  
Mkt. Market  
M.O.H. Medical Officer of Health  
N.C.O. Non-Commissioned Officers  
P.W.D. Public Works Department  
P.M.O. Principal Medical Officer  
P.Z. Paterson Zachonis  
S.M.O. Senior Medical Officer  
W.A.F.F. West African Frontier Force  
W. & B. Witt and Busch

Contours in Feet



SANITARY REPORT 1913.







# PLAN OF TOWN OF LAGOS

REVISED TO AUGUST, 1911.

SCALE 12 CHAINS (792 FT) TO ONE INCH.  
LINKS 100 TO 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 CHAINS

## NOTES.

Tramways.....  
Motor Roads (Proposed).....  
Wells.....  
Boundaries of Districts.....  
Longitude of Lagos Observatory 3° 23' 49" S  
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Red — Drainage Areas  
Crimson — Simpson Drains







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## NOTES

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Contours in feet



Green = Area where thatched Roofs are prohibited.  
Red = Swamp Area.







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REVISED TO AUGUST, 1911.

SCALE 12 CHAINS (792 FT) TO ONE INCH.  
LINKS 100 YDS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 CHAINS

## NOTES.

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Contours in feet



Blue — Sanitary Districts.  
Red — Antimosquito or Inspection Districts

SANITARY REPORT 1913.



